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ABSTRACT

This planning document projects the needs, activities, and performance goals for the University of California's library system. The first four chapters provide a historical overview of the university and its library system; an analysis of the functions of the libraries; a discussion of the need for a new approach to the system's organization, operation, and services; and conclusions to be used in designing a new library system. The chapters which follow are concerned with the identification and location of materials, delivery and use of materials, acquisition and processing, information services, staffing, housing, and organization and governance for each of the six levels of service proposed--departmental and college, campus, regional, university and state, national, and international. The desired response time is also specified for each of these levels. A summary and recommendations for the future, accompanied by cost data, conclude the report. Proposed activities include development of an online union catalog with terminals on all campuses; formalization of existing courses in library use and research; development of an acquisitions formula based on academic programs; and increasing staff in the reference and circulation departments. A computerized simulation model was developed to facilitate statistical analysis of the library's space problem. (JPF)

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THE UNIVERSITY OF CALIFORNIA LIBRARIES

A Plan for Development

1978 - 1988

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Office of the
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Universitywide Library Planning

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PREFACE

The first draft of the plan for development of the University of California libraries was distributed in November 1976 for review within the University. Comments were received from all campuses--from individual faculty, students, and staff members, as well as from campus and library administrators.

As discussed in Chapter I, policies and guidelines for the University's library system have been in a process of development for the last several years. In the spring of 1976, a general planning document entitled The University of California Libraries: Problems and Prospects was approved as an internal working paper that identified systemwide policies on which there was general agreement and suggested avenues of investigation toward solution of the libraries' most pressing problems. It was obvious to all concerned, however, that specific recommendations, with costs and implementation dates, could not be made without the collection of much more comprehensive data on the libraries and their problems, and intensive study of possible solutions.

The accomplishment of this data-gathering and research has been the task of dozens of individuals during the past year. Donald D. Thompson, Assistant to the Executive Director of Library Planning, led a team which did the bulk of the data-gathering and performed a major research study of library space problems. In the process, the team produced a computerized simulation model that not only facilitates statistical analysis of the University's space problems but should also assist other research libraries in performing the same task. Gary Lawrence programmed the model as well as assisting Thompson in its design. Richard King researched many of the components of the library space problems. Burke Conley investigated various methods of compact shelving, and Cynthia Rimbach analyzed the possible impact of microforms.

Michael Berger, Manager of Bibliographic Projects, and Bruce D'Ambrosio performed the major research on the feasibility of the on-line catalog and other automation projects discussed in Chapter V. Bill Harrelson investigated many of the technical problems involved, particularly those having to do with communication links and on-line terminals, and Ric Venzie analyzed the requirements for bibliographic control of serials.

Able administrative assistance for both of the groups mentioned above was provided by Sharon Conniff.

In addition to those directly assigned to the project, the development of the plan has been greatly assisted, directly or indirectly, by dozens of other individuals and groups. Belle Cole performed the historical research and supplied much of the information for the first part of Chapter I. Suggestions for Chapter VII were made by numerous members of the UC Berkeley library staff, including its Reference Services Committee. Lawrence Garvin helped greatly with Chapter X, and Dennis Smith provided historical and budgetary details. Staff members of all the University libraries contributed major assistance in the collection of data, without which the research could not have been accomplished. University Librarians have been a constant source of information and assistance, and the library planning effort in general has benefited continuously from the advice and guidance of the Library Policy Steering Committee, the Library Council, the Academic Senate Library Committee, and the Librarians Association of the University of California (LAUC). Hundreds of individual faculty members, students and staff reviewed the successive drafts of the plan, and their comments have contributed materially to the final product. To all, the plan and the University owe a debt of thanks.

No plan, however, can remain unchanged for long. Circumstances beyond the University's control will undoubtedly force some alterations in coming years, and changes in technology will provide new opportunities for development. The University's research in library matters is continuing, and the results of this research will also affect future plans. The very size and complexity of the institution and its libraries demand a constant and intensive planning process.

Development and revision of the library plan will continue, therefore, and the consultative process described above will also continue. Each year an updated plan, projecting the needs, activities, and performance goals of the library system on a multi-year basis, will be produced, and once approved, the recommendations will become the basis for the University's library budget requests.

The results of recommendations which are implemented must also be monitored to insure that the desired effects do in fact take place. As suggested in Chapter IV, the library system proposed can only succeed if it is able to respond to users' needs within an appropriate time. Furthermore, it must be able to do so in a sufficiently high percentage of cases that users are convinced of the system's ability to perform as intended.

The actual performance of all elements of the system, therefore, will be measured on a continuing basis, and changes will be instituted when it is clear that they are needed to meet the desired performance goals. By their nature, many parts of the system will provide as a matter of course the information needed to judge their performance. Statistics on many activities are already kept, and the automation systems proposed will provide an enormously helpful body of additional information. In the last analysis, however, the best judge of the system's performance is the person for whom it is designed, the user. Periodic surveys will therefore be made to ascertain the extent to which the service rendered by the library system is perceived by the users to be satisfactory, and to pinpoint areas where further improvement is necessary.

The process, in short, must come full circle. The library users--faculty, students, and staff alike--must contribute on a continuing basis to the development of the library plan, assist in its revision, and judge the results of its recommendations. Only thus can the plan fairly reflect the users' needs, and only thus can there be a library system of which the University can be proud.

Stephen R. Salmon
Executive Director of
Universitywide Library Planning

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CHAPTER I

THE UNIVERSITY AND ITS LIBRARIES

Information is power. Used rightly, it can cure physical, mental and social ills; it can improve the quality of our life, the environment we live in, and the world we leave to our children. Without it, even the most earnest endeavors are likely to fail. Information, then, is vital to all of us, personally and collectively.

To no institution is access to information more crucial than to a university, and the keys to this kingdom of information are its libraries. In them lie the results of knowledge discovered, and the bases for new knowledge; through them, knowledge is transmitted, and new knowledge discovered.

The libraries are thus central to the mission of the university, integrated in and integral to its endeavors. Because of this centrality, the libraries themselves are strongly influenced by the nature and history of the particular institutions they serve. Libraries obviously do not operate in a vacuum, and each of the libraries at the University of California has been uniquely shaped by the size, stature and history of the University. Each of the libraries also has its own history, conditioning in many ways what it is and does today.

In planning for the future of the University's libraries then, it is important to understand the past.

The University. In the hectic gold rush days of 1849, pioneers of the State drafted a constitution in Monterey which contained the promise of a University of California. The Union admitted California the following year, but another eighteen years passed before the promise could be realized. On March 23, 1868, Governor Henry Haight signed the Organic Act which officially created the University. Its initial site was the Oakland campus of the College of California, which offered its buildings and land on the condition that a "complete University" be established. How complete that University was to become neither the generous donors nor the young State were likely to have foreseen.

By 1873, the University had moved to its Berkeley campus and added a second: Toland Medical College in San Francisco, which was formally transferred to The Regents that year, and became the basis for what is now the University of California at San Francisco.

In 1905, the Legislature established the "University Farm" near Davis, and in 1907 a Citrus Experiment Station was established at Riverside. Another specialized facility, begun as a marine station in La Jolla, joined the University as the Scripps Institution of Oceanography in 1912. All were later to become full-scale campuses.

The second general campus, however, did not open until 1919, when the State Normal School in Los Angeles became the "Southern Branch" of the University and accepted its first students. As the University of California at Los Angeles, it moved to its present site in 1929, and by 1933 had begun offering graduate work.

During the war year of 1944, Santa Barbara State College became part of the University, and in 1954 moved to its present site. The same year, Riverside began offering classes in its newly established College of Letters and Science, and was declared a general campus in 1959.

Yet even with the expansion to five campuses, the Medical Center in San Francisco, the Scripps facility at La Jolla, and other specialized installations, the growth of the University in terms of enrollment had not been remarkable up to this time. Returning veterans and other new students swelled enrollments at the State's junior colleges and State colleges, but the University's enrollments remained relatively stable, even declining in some years, as Table 1 indicates.

The 1960 Master Plan. This rather stately progress began to change dramatically in 1960, a year whose events were to shape the University for decades to come. In that year, the landmark Master Plan for Higher Education was published by the State, and its recommendations enacted into law by the Donahoe Higher Education Act. For the University of California, the most important provisions of the Master Plan were:

Table 1

Enrollment on All Campuses
(Regular Session)

Year	Total Students
1948/49	48,943
1949/50	48,792
1950/51	44,260
1951/52	38,841
1952/53	38,050
1953/54	37,971
1954/55	40,294
1955/56	43,278
1956/57	45,303
1957/58	46,786
1958/59	48,342

Source: University of California, Statistical Addenda.

. that public higher education be divided into three "segments": the junior colleges, the "State College System" and the University of California;

. that "each shall strive for excellence in its sphere";

. that "the University shall have the sole authority in public higher education to award the doctor's degree in all fields of learning," except that joint doctor's degrees may be awarded with the state colleges in selected fields;

. that "the University shall be the primary state-supported academic agency for research";

. that the University "shall have exclusive jurisdiction over training for the professions of dentistry, law, medicine, veterinary medicine, and graduate architecture";

. that the University shall also "provide instruction in the liberal arts and sciences," and that "in order to raise materially standards for admission" the University should plan to admit all qualified graduates of California public high schools "from the top one-eighth."[1]

These provisions had enormous implications for the University, and the University remains committed to them to this day.

The impetus for the Master Plan had been a growing concern over "rapidly mounting enrollments" in the secondary schools and colleges, and the document gave considerable attention to projections of enrollments for all three segments. "In sharp contrast to the relatively slow growth of higher education" in the 1950's, "the period just ahead will register enormous gains," the Plan predicted, not only because of the increased birth rate but also because of the "continued large scale immigration" to California. By 1975, the Plan foresaw a tripling of enrollment, and providing for "this tremendous increase" was "the major problem confronting higher education in the state."[2]

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[1] A Master Plan for Higher Education in California, 1960-1975, pp. 1-3.

[2] Ibid., pp. 45-46.

For the University, it predicted an enrollment during that period to 136,000 students if the existing admission patterns were followed; to lessen the impact on the University and the cost to the State of this rapid growth, however, it recommended that some of these students be diverted to the other two segments, the state colleges and junior colleges. Assuming certain steps were taken, the Plan predicted that the number of students could be modified to 118,750. For existing UC campuses, the Plan recommended that enrollments in no case exceed 27,500. This meant that new campuses would be needed to accomodate the increase, and the Plan recommended that three new campuses already approved by The Regents be "completed without delay." Enrollments for these campuses were to be planned as follows:

San Diego-La Jolla	7,500
Southeast Los Angeles-Orange County	12,500
South Central Coast	10,000

Strategies for Growth. Meanwhile the University had been planning its own strategy for coping with the influx of new students, and in the same momentous year of 1960 produced a Growth Plan, initiated by President Clark Kerr, which projected enrollment beyond 1975, to the year 2000. If the University accepted the same proportion of California's student population in that year as in 1960, the University's Growth Plan predicted that total enrollment would grow to 214,000 students, over four times as many as the existing number. To help accommodate them, the 1960 Growth Plan proposed expanding the capacity of three existing campuses--Davis, to 15,000; Santa Barbara, to 15,000; and Riverside, to 10,000--as well as building the three new campuses already planned. Among other features of this plan was the provision that all campuses, with the exception of San Francisco, were to be developed as general campuses, offering undergraduate liberal arts instruction as well as graduate and professional programs.

During the early 1960's, the University worked feverishly to cope with the pressures of enrollment and expansion. By 1965, the number of students had grown by over 50 percent since 1960, and the three new campuses had opened their doors to the first students: UC San Diego in 1964, UC Irvine and UC Santa Cruz in 1965. In 1966, however, this seemed far from adequate. Using the demographic data then available, the University projected enrollments in 1975 would exceed 146,000 students, compared with the 118,750 projected by the Master Plan; by 2000, enrollments were projected to be 274,500 instead of the 214,000 estimated in the 1960 Growth Plan. This presented monumental problems. Even with year-round operation of the campuses, these figures indicated expansion needs far beyond the 1960 estimates. To accommodate the increase, the 1966 Growth Plan recommended that the maximum enrollment of 27,500 be planned not only for Berkeley and Los Angeles, but also for the three new campuses (Irvine, San Diego and Santa Cruz), and that five additional campuses be planned, as follows:

Location	Opening Date	Enrollment
San Francisco North Bay	1972	15-20,000
Los Angeles Central or Metropolitan Area	1975	15-20,000
San Joaquin Valley	Unspecified	15-20,000
San Francisco Bay Area	Unspecified	15-25,000
Los Angeles Area	Unspecified	15-25,000

All campuses were to be planned as general campuses, including San Francisco. It was pointed out that the University remained committed to fulfillment of its role under the Master Plan, including admission of all qualified applicants in the top 12-1/2% of their high school class, and expansion of this magnitude was therefore inevitable and mandatory.

These estimates and plans appeared valid for a number of years. Berkeley and Los Angeles quickly reached (and even exceeded) their planned maximums, and other campuses grew more rapidly than the available faculty and facilities could properly handle them. By the end of the decade, enrollment had doubled, as indicated in Table 2, and the 1969 Academic Plan estimated that enrollment would approximate 156,000 by 1977/78. Given these circumstances, the additional campuses recommended by the 1966 Growth Plan were still justified, and the two campuses that were scheduled to begin operation in the 1970's remained in the 1969 Plan as recommended policy.

Table 2

Enrollment on All Campuses
(Regular Sessions Only)

Year	Total Students
1959/60	49,289
1960/61	54,538
1961/62	59,728
1962/63	64,392
1963/64	69,860
1964/65	77,779
1965/66	87,252
1966/67	94,882
1967/68	92,480
1968/69	96,695
1969/70	103,524

Source: University of California, Statistical Summary of Students and Staff. Beginning in 1967/68, the method of reporting was changed; figures before that date are for "net" students, and figures after that date are average annual headcount enrollments.

If the 60's provided a startling change from the 50's, however, the 70's did no less so when compared with the 60's. The University's 1971 Growth Plan Task Force report noted that the 1970 Census pointed to a sharp downward shift in the birth rate and in immigration to California as well. The report anticipated that some growth would continue, but at a much reduced rate (graduate enrollment at the University had already begun to fall short of predicted levels). By this time, too, it was clear that the State was unlikely to have either the will or the funds to enable the University to expand at the rate anticipated in 1969. Plans for additional campuses were dropped, and enrollment projections for the new campuses and for Riverside were revised sharply downward: to 13,700 for Irvine, to 11,900 for San Diego, to 10,500 for Santa Cruz, and to 12,600 for Riverside. For campuses that had been told only two years earlier to plan for 25,000 students (27,500 in the case of Santa Cruz), these were drastic changes in direction. Departments were caught half-formed, building plans were thrown awry, and even campus missions required re-thinking.

Nor was the full extent of the change yet clear. By the time the 1974 Academic Plan was published, it had become obvious that further downward revision would be necessary, and the University's current estimates have reduced the levels slightly further. Table 3 compares the plans of 1969, 1971 and 1974 with current projections for enrollment in 1980. Actual enrollment through 1975/76 and current (1976) enrollment projections to 1984/85 are shown in Table 4.

Present Characteristics. Enrollment projections are important, because they play a key role in preparing the University's budget, and the changes in enrollment projections over the last two decades have had a marked effect on the nature of the University and its planning. Other factors are equally important, however, and have at least as much effect on the character of the institution and its planning.

The Faculty. Certainly the most important characteristic is the nature of the faculty, since the caliber of the faculty is the major determinant of the quality of the University's academic programs. On this score, the University is without peer. It leads all institutions in the world in the number of Nobel Laureates on its faculty. More than

Table 3

Projections of General Campus Enrollment in 1980/81*

Campus	1969**	1971	1974	1976
Berkeley	27,500	28,700	27,200	26,900
Davis	16,000	15,800	16,100	15,300
Irvine	25,000	13,700	8,200	9,100
Los Angeles	25,000	27,900	27,000	27,200
Riverside	25,000	12,600	6,300	5,000
San Diego	25,000	11,900	9,900	9,600
Santa Barbara	25,000	18,400	14,400	14,300
Santa Cruz	27,500	10,500	7,300	6,400
Total	196,000	139,500	116,400	113,800

*Health Sciences enrollments not included.

**Figures in the 1969 Academic Plan were not specifically for 1980/81, but for an "out year;" that is, for an undesignated year at which a "steady state" would be reached.

Table 4

Average Annual Headcount Enrollment

	Actual						Projected								
	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/34	1984/85
Berkeley															
General Campus	27,430	26,629	27,357	28,666	28,499	28,483	27,475	27,190	26,950	26,900	26,900	26,900	26,900	26,900	26,900
Health Sciences	456	490	515	558	603	607	648	664	679	683	685	685	685	685	685
TOTAL	27,886	27,119	27,872	29,224	29,102	29,090	28,123	27,854	27,629	27,583	27,585	27,585	27,585	27,585	27,585
Davis															
General Campus	12,155	12,720	13,668	14,029	14,462	15,174	15,208	15,100	15,150	15,250	15,300	15,400	15,500	15,600	15,600
Health Sciences	776	998	1,134	1,308	1,522	1,694	1,679	1,792	1,838	1,884	1,930	1,971	1,973	1,973	1,973
TOTAL	12,931	13,718	14,802	15,337	15,984	16,868	16,887	16,892	16,988	17,134	17,230	17,371	17,473	17,573	17,573
Irvine															
General Campus	5,479	5,906	6,480	7,338	7,740	8,271	8,212	8,325	8,600	8,850	9,100	9,200	9,300	9,300	9,300
Health Sciences	580	613	661	664	723	875	970	1,020	982	1,040	1,065	1,083	1,081	1,081	1,081
TOTAL	6,059	6,519	7,141	8,002	8,463	9,146	9,182	9,345	9,582	9,890	10,165	10,283	10,381	10,381	10,381
Los Angeles															
General Campus	25,414	24,139	25,620	26,896	27,585	28,321	27,213	27,230	27,200	27,200	27,200	27,200	27,200	27,200	27,200
Health Sciences	2,379	2,624	2,861	3,103	3,271	3,416	3,471	3,590	3,680	3,745	3,806	3,845	3,868	3,889	3,889
TOTAL	27,793	26,763	28,481	29,999	30,856	31,737	30,684	30,820	30,880	30,945	31,006	31,045	31,068	31,089	31,089
Riverside															
General Campus	5,717	5,782	5,235	5,086	4,820	4,855	4,760	4,936	4,900	4,900	5,000	5,000	5,000	5,000	5,000
Health Sciences	--	--	--	--	--	--	--	24	48	48	48	48	48	48	48
TOTAL	5,717	5,782	5,235	5,086	4,820	4,855	4,760	4,960	4,948	4,948	5,048	5,048	5,048	5,048	5,048
San Diego															
General Campus	5,323	5,720	6,338	7,061	7,824	8,588	8,970	9,235	9,490	9,490	9,600	9,600	9,500	9,500	9,500
Health Sciences	353	455	526	665	719	846	897	970	1,001	1,060	1,121	1,175	1,175	1,175	1,175
TOTAL	5,676	6,175	6,864	7,726	8,543	9,434	9,867	10,205	10,491	10,550	10,721	10,775	10,675	10,675	10,675
San Francisco															
Health Sciences	2,551	2,647	2,809	2,872	3,065	3,251	3,483	3,600	3,704	3,808	3,913	3,959	3,978	3,980	3,982
Santa Barbara															
General Campus	13,009	12,239	11,828	11,989	12,926	14,135	14,021	14,000	14,100	14,250	14,300	14,300	14,300	14,300	14,300
Santa Cruz															
General Campus	3,713	4,209	4,631	5,031	5,550	5,910	6,060	6,200	6,250	6,400	6,400	6,500	6,500	6,600	6,600
All Campuses															
General Campus	98,240	97,344	101,157	106,096	109,406	113,737	111,919	112,216	112,640	113,240	113,800	114,100	114,200	114,400	114,400
Health Sciences	7,095	7,827	8,506	9,170	9,903	10,689	11,148	11,660	11,932	12,268	12,568	12,766	12,808	12,831	12,833
TOTAL	105,335	105,171	109,663	115,266	119,309	124,426	123,067	123,876	124,572	125,508	126,368	126,866	127,008	127,231	127,233

150 academic staff members have been elected to the National Academy of Sciences, and the Berkeley campus alone is second only to Harvard in the number of Academy members. In 1976, the University's faculty members were awarded 41 Guggenheim Fellowships out of a national total of 300, more than any other university in the nation, and for the 12th time in the past 13 years, faculty members on the Berkeley campus received more of these prestigious fellowships than scholars on any other single campus.

These numbers speak to the caliber of individual faculty members, but other measures confirm the standing of the faculty as a whole. In its latest ranking of graduate programs, for example, the American Council on Education rated Berkeley first, as it has in previous ratings. With UCLA and UC San Diego, in fact, the University has three campuses with graduate schools rated by the ACE as among the top 20 in the country.

The Students. Faculty of this caliber naturally attract outstanding students, and graduates of the University have gone on to positions of eminence and leadership throughout the State and the nation. Ninety percent are California residents, but there are also students from all 50 states, and from more than 100 foreign countries. Nearly one-third are studying at the graduate level.

Research. The distinction of the University's faculty is complemented by the quality and scope of its research facilities. Each campus maintains research units that include laboratories, museums, centers, and institutes. There are 135 Organized Research Units, and there are research stations, field stations, and other research facilities in more than 80 locations throughout California. Three specialized laboratories --the Lawrence Berkeley Laboratory, the Lawrence Livermore Laboratory, and the Los Alamos Scientific Laboratory (in New Mexico)--conduct important work in high energy physics and related fields under contract with the U.S. Energy Research and Development Administration (ERDA); in recent years, they have also made important contributions in medical physics. Three campuses--Berkeley, Los Angeles, and San Diego--are consistently among the top ten institutions in the country in the amount of Federally-funded research support received, and additional research funds are provided by private endowments and the University itself.

These funds help provide research fellowships and assistantships not only for faculty but also for outstanding graduate students.

Degree Programs. Instruction is offered in some 70 schools and colleges throughout the nine campuses. At present, the University offers a total of over 600 graduate and professional degree programs, and over 200 separate academic majors. All of the general campuses offer undergraduate programs of high quality in the full range of traditional liberal arts areas, and each campus has developed graduate programs that emphasize that campus's unique strengths and abilities. The University's objective as a whole is to provide comprehensive coverage of all significant areas of graduate and professional study.

Future Planning. As the above paragraphs indicate, the University of California has become in little more than a century the home of intellectual and artistic activity that rivals the best in the world. It was the pioneer among major institutions in the development of the multi-campus concept, and now that this system is mature it is dedicated to ensuring that the system as a whole operates in a reinforcing, positive and creative manner. As the current Academic Plan states, the University will continue to strengthen its planning in order "to assure that all university-level programs of recognized scholarly and professional importance are presented somewhere within the institution," but "their distribution and development on the several campuses will be planned to achieve a total spectrum of University offerings of breadth and quality not attainable in a single-campus institution of higher learning." The University, then, will seek to reinforce "complementarity" of programs, and "to continue strengthening the academic development of the growing campuses." Future enrollment growth, when it occurs, will have to be accommodated on the newer campuses rather than at Berkeley and Los Angeles, and "it is essential, therefore, that the growing campuses achieve appropriate academic balance."

> The University cannot afford to drain essential resources from the mature campuses to support a substantial rate of expansion on the growing campuses. By the same token, the University cannot afford to foreclose the scholarly development of the growing campuses in order to protect at all costs the distinction of the mature campuses. The most thoughtful and imaginative efforts at academic planning and resource allocation will

> be needed to keep pace with the intellectual demands of the times and to strike a proper balance in support among the individual campuses that make up the University of California. Finding and maintaining that balance will be the central planning issue of the 1970s.[3]

The Libraries. For the libraries, the balancing act is likely to be even more difficult than for the University as a whole, because, as the Academic Plan itself notes, "the era of rapid physical expansion has passed, but the rapid growth of knowledge itself continues."[4] This knowledge must be made available, not only to each library's local constituency, but increasingly to the system at large. Like the campuses, each library builds on its strengths and unique characteristics, influenced not only by the general history of the campuses outlined above, but in many cases by the particular circumstances of its own past.

The "library" donated by the College of California in 1869 for "the complete University" consisted of a grand total of 1,200 volumes. Present concerns about access to the collections pale by comparison with the situation in the beginning: the library rules specified that it was to be open for one hour only, from 4:00 to 5:00, and that "at five o'clock precisely, at a signal given by the Librarian, all books shall be immediately returned."[5] By 1872, the collections had grown to 4,651 volumes "including one novel." As yet, however, it had no full-time librarian--Bret Harte had been offered the post but declined--until in 1875, a graduate of the previous year, Joseph C. Rowell, was appointed. In 1883, he succeeded in having the library made a depository for U.S. government publications, and from that time the library grew rapidly; by the turn of the century it had almost passed 100,000 volumes, and 15 years later had passed 300,000. Rowell (who introduced the concept of the card catalog to the West Coast, as noted in a later chapter) began to plan new methods of access to this large and growing collection, and proposed a system of campus subways to connect the library with other buildings and to contain "a pneumatic book railway." Unfortunately this advanced idea was not realized, or it might have anticipated today's campus delivery service by some 60 years.

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[3] University of California Academic Plan, 1974-1978, pp. 3-4.

[4] Ibid., p. 3.

[5] Russell H. Fitzgibbon, Libraries of the University of California, p. 13. Many historical items in the discussion that follows are also from this excellent booklet, published by the University in 1965.

Meanwhile the collections grew both in size and distinction. The famous Bancroft Library was acquired in 1905, and in 1911 plans were laid for the Doe Library, which was occupied in 1917. By 1922, the collections had passed the half million mark, and beginning in 1924 began to be decentralized. In that year the Lange Library of Education was opened, and in the early 1930's the Biology Library was established in the Life Sciences Building. They set a pattern for what was later to grow to 31 branches; some, such as the East Asiatic Library, are among the most important in the country. By 1950, the library was the sixth largest academic library in the country, a position it still maintains today.

The UCLA library, begun by the State Normal School in 1881 when Los Angeles was a town of 12,000, had grown by 1907 to 15,000 volumes. When the school became the University's "Southern Branch" in 1919, it was obvious that the library was inadequate for university purposes--there were 25 copies of Nature Stories for Young Readers, but no scholarly edition of either Shakespeare or Chaucer--and from that time forward the University has made unusually strong efforts to build the collection. It is, as a result, one of the youngest major research libraries in the country.

Not all of the early collection efforts were apt (one of the first purchases was of eight Babylonian clay tablets for $30), but the Senior Class of 1922 (more to the point) contributed a significant sum so the library could begin purchasing the Oxford English Dictionary, and gifts have contributed significantly to the growth of the collection ever since. By 1929, when the school moved to the Westwood campus, there were 154,000 volumes. In 1934 the University received title to the great William Andrews Clark library of English literature, music and other humanistic works. In 1944, Lawrence Clark Powell became Librarian, and the library entered an era that saw the collections expand to over a million and a half volumes.

The Santa Barbara library began in 1891 as a collection of cookbooks and carpentry manuals in the Anna S.C. Blake Manual Training School. In fact, the "foundation book," which still occupies an honored place in the Special Collections Department, was a guide to woodworking and domestic training by the Swedish educational reformer Otto Salomon. By 1912, it still had only 250 volumes, but after the move to the Riviera campus steady growth began. William Wyles began donating his distinguished collection of Civil War materials in the 20's, and by the time the school became part of the University in 1944 the library had some 40,000 volumes. After transfer to the new campus site in 1954, the collections grew rapidly, doubling in the four years after the school's designation as a general campus.

If Santa Barbara's collection was limited at the beginning, Davis's was even more so. In 1909, it consisted of a small collection of agricultural bulletins, and by 1924, it still contained only 2,000 volumes. With a new librarian that year, however, it began to grow, and by 1951 had reached 80,000 volumes. By the early 1960's, the collections had grown to almost 300,000 volumes.

Riverside similarly was limited primarily to agricultural publications in its earlier years. The library was organized formally in 1925, but by the time the College of Letters and Science was established in 1951, it had only 14,102 volumes. By 1955, however, the collections passed the 50,000-volume mark, and by 1959, when Riverside became a general campus, numbered more than 100,000.

San Francisco's collection could lay claim to being perhaps older than Berkeley's, except that virtually all records were lost in the great earthquake and fire of 1906. Certainly Dr. Toland's medical college, which began in 1864, had a library, and the pharmacy and dentistry schools associated with it after the college joined the University in 1873 also contained rudimentary collections. Just before the earthquake, the total collections numbered some 2,300 volumes. After the 1906 holocaust, however, much of the medical program had to be moved temporarily to Berkeley, and it was not until the new quarters for the library were established in the Medical School building that the collections began to grow. By 1944, there were 65,000 volumes, plus 34,500 university dissertations, and by 1960 the collections had grown to almost 200,000 volumes.

The Impact of the 60's. This, then, was the situation of the libraries when the 1960 Master Plan was published. Berkeley had over 2-1/2 million volumes and Los Angeles almost 1-1/2 million; Davis and San Francisco had slightly under 200,000 volumes each; Riverside and Santa Barbara had about 130,000 each. With small collections at the Hastings College of Law, the marine station in La Jolla, and Mt. Hamilton Observatory, the total University collections numbered just over 4,700,000 volumes--the 4 million at Berkeley and Los Angeles, and the 700,000 scattered among the rest. Clearly, except on the two older campuses, the libraries were inadequate for the challenges of the Master Plan, and intensive development would be necessary.

The first formal recognition of this fact came in April, 1961, with the adoption by The Regents of a ten-year plan for library development. Among its many recommendations were the following:

. The major libraries at Berkeley and Los Angeles would be maintained, with concentration on their specialized and unique collections.

. The Berkeley library would grow at a rate of 4 percent per annum until it reached 3 million volumes; at that point, it would continue to add 120,000 volumes per year, but would transfer an equal amount to a new storage facility, "probably located at Richmond." The resources of this inter-campus storage library would be "made available to all campuses on the basis of equality."

. UCLA would expand its collections to reach the 3 million mark by 1971. After that time, it too would add 120,000 volumes per year, and transfer an equal number of volumes to "an inter-campus storage library, probably located at Los Angeles."

. For the other six campuses, a collective total of 3 million volumes would be reached by 1971. Of this total, Davis, Riverside, and Santa Barbara were to have not less than 500,000 volumes each.

. Basic libraries of 50,000 to 75,000 volumes would be available at the three new campuses by the time instruction began.

To provide increased access to the collections as a whole and begin the building of a true library system, The Regents also approved funds for several specific measures:

. Reproduction of the catalogs of the Berkeley and Los Angeles libraries for use on the other campuses.

. Funds for additional clerical and other services at Berkeley and Los Angeles to facilitate intercampus library lending.

. Funds for the purchase and operation of suitable vehicles for the Santa Barbara, Riverside, and Davis campuses to expedite interlibrary lending between those campuses and the Los Angeles and Berkeley libraries.

. Funds for the intercampus exchange of faculty and advanced graduate students to provide for study and research on other campuses.

One additional significant provision in the plan was that the collections for the new campuses "may initially be acquired for these campuses by the staff of the San Diego library." The San Diego Librarian, Melvin Voigt, had calculated that by selecting, ordering, and cataloging three copies of an identical 75,000-volume undergraduate collection at once, approximately $400,000 could be saved in processing costs. The project was approved, and the New Campuses Program, as it was called, began in the San Diego library in the fall of 1961. Titles for the collections were determined with great care, and reviewed by specialists around the country. The resulting list was subsequently published by the American Library Association, and became the first standard list of books for college libraries in forty years. The books were ordered, cataloged and ready for use when the new campuses opened, San Diego in 1964, and Irvine and Santa Cruz in 1965.

By that time, the 1960 Library Plan was being re-examined in the light of work on the 1966 Growth Plan for the University. Berkeley had already reached 3,000,000 and was beginning to transfer volumes to the storage facility, but in light of the new projections the goal for the size of collections at both Berkeley and Los Angeles was raised from 3 million to 4.1 million. The policies of intercampus cooperation and "complementarity" were strongly reaffirmed. A revised library plan was then approved by The Regents and incorporated in the 1966 Academic Plan.

Meanwhile, all campuses struggled to meet the goals. "When the 1960 plan was adopted, the University was acquiring about 273,000 volumes per year; by 1965, when the plan was revised, the acquisition rate had been increased to 665,000 per year. And by 1971, all of the 1960 plan's collection goals had been met: Berkeley had reached its 3 million long before, UCLA had just over 3 million, and the other campuses had achieved their collective 3 million by 1968, three years ahead of schedule. By 1971, in fact, the total University collections numbered not 9 million but more than 11.5 million volumes.

The Impact of the 1970's. That same year, however, was the year the University's new Growth Plan projected a drastic change in fundamental planning assumptions. Libraries geared to rapid expansion, to building collections in anticipation of new academic programs, were confronted with long-range projections for which their plans were suddenly inappropriate. Already it was clear as well that library funding from the State was likely to fall even further below expectations than enrollments. From that point on, as noted earlier, all revisions were downward, and the changes in plan left imprints on the University libraries which are visible to this day.

A few examples will suffice.

. The impressive main library at San Diego is not in the center of campus, where one would normally expect it to be, but at one end. On the campus plans, the library is indeed in the center, but the rest of the planned campus has never been built. Another library, at the other end, was originally planned to serve the first "cluster" of small colleges; now it serves as an undergraduate library, and a partial resource for those who live and work at a distance from the main library.

. The Riverside main library is crowded on all floors with non-library activities: departmental offices, classrooms, and other functions. With the drop in enrollment projections, the State has been unwilling to build new classrooms or office buildings, so there is no other place for these non-library activities to move.

. At Irvine, a broad array of graduate programs was approved and operating before the library had a chance to build its collections to a size sufficient to support them. Today, the library collections are still 30 percent below the library standards approved by the American Library Association, a fact that may threaten campus accreditation in the future.

The pattern is repeated, with variations, on most other campuses, accompanied in many instances by disenchantment and even bitterness over the changed expectations.

By 1971, with the new climate of financial austerity in full swing, the State's Department of Finance had also become concerned about the University's libraries, primarily from the standpoint of their cost. In late 1971 and early 1972, the Department published a two-volume report entitled The Management and Operations of the University of California: The Library System of the University. The first volume concentrated on the development of library collections, and cast doubt on whether the University's goals for collection-building in the 70's could be met. Its authors pointed out that many parts of the existing collection were used infrequently, and argued that much more should be done in the way of "increased interdependence, cooperation, and coordination," particularly in the use of collections. Among the major recommendations were:

. that the University "reexamine and restate its library acquisition goals and policies";

. that steps be taken to avoid unnecessary duplication;

. that "budgetary restraints be used to insure compliance" with these recommendations;

. that more funds be allocated "to improve interlibrary cooperation and coordination within the UC system";

. that more materials be purchased in microform.

The second volume concerned technical operations of the libraries, criticized the use of blanket and approval orders, and recommended more extensive use of automation.

The University disagreed with many of the report's specific findings and recommendations, but agreed in general that steps toward greater coordination and cooperation were desirable, pointing out that much activity in this direction was already underway.

Library Planning in the 70's. The austerity of the economic climate, revised growth projections and the DOF report all combined, in fact, to accelerate systemwide library planning efforts from this time forward. Just as academic planning to this point had been principally concerned with the growth in enrollments, however, much of the initial library planning effort of the 70's continued to be preoccupied with the growth of library collections.

In the summer of 1972, a Task Force was created to recommend proposals for a UC library plan for the next decade. The report of this group, chaired by Professor R. O. Collins, suggested three priorities:

1. The acquisition and maintenance of collections on all campuses adequate to support authorized instructional programs.
2. Maintenance and improvement of the Berkeley and Los Angeles libraries as Universitywide resources.
3. Improvement of access and exchange of library materials among the University's libraries.

The report also recommended five policies, having to do with examination of costs, inventorying special collections and campus strengths, providing support to non-University users, establishment of branch libraries, and maintenance of service levels. In the discussion that followed issuance of the report, however, attention was concentrated on the sections dealing with acquisitions, and particularly on the Task Force's recommendation that the Berkeley and Los Angeles libraries should be allowed to grow at an annual rate of at least 4 percent, regardless of the impact of this policy on the other libraries. The 1960 library plan had first used the 4 percent figure, but in that case it was a constant 4 percent of the 3 million volume goal for the two large libraries--i.e., a constant annual rate of 120,000 volumes. The Collins report, on the other hand, seemed to recommend a compound growth rate of 4 percent, and other campuses calculated that this would mean their acquisition rates "could be reduced to obviously impossible levels, averaging less than 20,000 volumes per campus annually."[6] After wide discussion, the Collins report was "set aside" because of its focus on acquisitions and because it "did not embody a systems approach to library planning."[7]

The following year (1973) another committee was appointed, this one called the Ad Hoc Committee on Library Acquisitions Policy and chaired by Professor Charles Susskind. The Susskind report contained for the first time a formula approach to acquisitions "which, though it had its defenders, was not fully acceptable."[8] Because the committee's charge related only to acquisition policy, its report was also subject to the same criticism as the Collins report: i.e., that its recommendations were insufficiently broad to serve as an adequate basis for library planning.

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[6] Report of the Ad Hoc Committee on Library Acquisitions Policy, 1973, p. 1.

[7] Report of the Library Policy Task Force, University of California Library Policy to 1980-81, 1974, p. 1.

In 1974, President Hitch then appointed a Library Policy Task Force charged with concentrating on broad policy issues, taking a systems approach to library planning, and confronting the issues of library growth that had been identified by the earlier groups. This Task Force, chaired by Angus Taylor (then Vice President), identified four "bases" for library planning:

1. The library holdings of all the campuses should be considered as a single University collection rather than nine separate collections.

2. The University library collection should be developed and maintained in close relation to the University and campus academic plans.

3. Policies for acquisition and operation should be designed to make the most effective use of available funds.

4. Each campus should have a collection which, in conjunction with other elements of the University library system, is fully adequate to support the programs of instruction and research approved for the campus.

As to the structure of the library system, the report recommended that "the University collection be organized into regional systems," tentatively suggesting one in the North and another in the South.

This report also received intensive review, and although there was great (and continuing) debate about specific recommendations there was general agreement on the four "bases," which President Hitch then endorsed.

Later in 1974, President Hitch appointed a Steering Committee for Systemwide Library Policy Implementation, chaired initially by University Provost David Saxon, to:

1. Translate the policies of the Library Policy Task Force Report into specific program objectives;

2. Plan a time-phased program of operational steps which utilizes the resources of the campuses and the Office of the President to achieve

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[8] Ibid.

these objectives;

3. Make the decisions necessary to implement the program; and
4. Monitor the progress of the implementation of the program.

In 1975, the Steering Committee established the position of Executive Director of Universitywide Library Planning to direct and coordinate the library planning process, and to implement the policies and decisions of the Steering Committee which were approved by the Academic Vice President or made in accordance with authority delegated by him. The Executive Director also:

1. Serves as the operational arm and agent of the Steering Committee;
2. Makes recommendations to the Steering Committee on systemwide operating and policy matters;
3. Initiates and coordinates the implementation of regional library planning projects;
4. Participates in the review of library budget proposals, with particular emphasis on the compatibility of campus rationales and support levels with systemwide program priorities;
5. Defines, with appropriate consultation, library system performance objectives and their resource implications;
6. Initiates and coordinates staff activities to develop management information for systemwide planning and program implementation;
7. Provides progress reports on policy implementation to campus and systemwide personnel; and
8. Coordinates campus and systemwide library automation programs through the Universitywide Library Automation Program, which reports to him.

This position was filled in January 1976, and the new Executive Director was charged with immediate preparation of draft planning documents. Two drafts were then distributed for comments, and the responses served as the basis for a third version, entitled _The University of California Libraries: Problems and Prospects_. This report was adopted in May 1976 as a "working paper" which identified the systemwide policies and immediate action steps on which there was general agreement, and suggested the most promising avenues of investigation for problems yet unresolved. Specific budgetary recommendations, building plans, growth formulas and cost estimates were avoided, because it was clear that intensive research was needed on the cost-effectiveness and appropriateness of many of the measures which had been earlier recommended. This research will continue into the future, but enough has now been completed to allow specific recommendations.

Present Characteristics of the Libraries. In 1976, the libraries of the University share with the institution itself a worldwide reputation for excellence and distinction. The main libraries on each campus and many of the branch libraries contain collections of national importance, many of them unique in the world. As indicated by Table 5 and the Appendix, they range from the very small to the very large, and from the very general to the very specialized, but each contributes importantly to the educational mission of the University and, directly or indirectly, to the intellectual life of the community at large. Together, they include almost 15 million volumes, more by far than at any other single academic institution, and exceeded in this country only by the Library of Congress. Their growth, by any standard, has been phenomenal, as indicated in Figure 1. On the library landscape, as Allan Nevins once predicted for the nine campuses as a whole, they "constitute an especially massive range."[9]

The library system as a whole--that is, as a system--is only now emerging, however. "To build and maintain a great library system for this multicampus University is not the same as the building of nine libraries, one for each campus," as the Academic Plan points out, and "it will be necessary to develop new patterns of library organization and service, and new strategies for getting the maximum utility from funds expended"[10] in order for it to function well.

Some progress in this direction has already been made, as the following chapters point out, but monumental problems still remain.

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[9] Allan Nevins, The State Universities and Democracy, University of Illinois Press, 1962, p. 114.

[10] University of California Academic Plan, 1974-1978, p. 40.

Table 5

Size of the Libraries
of the
University of California*

June 30, 1976

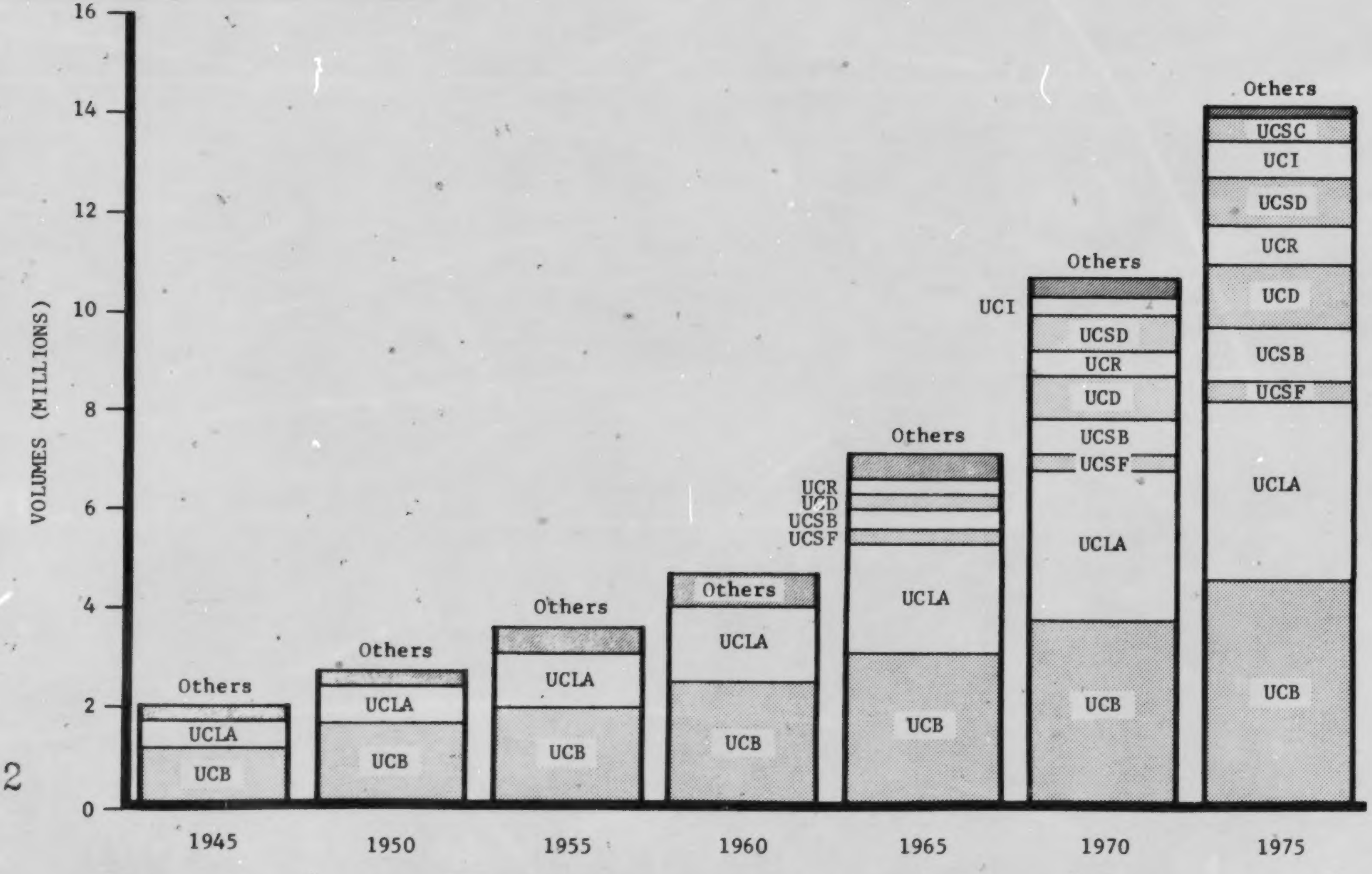
Summary of Holdings by Campus

Campus	Volumes
Berkeley	4,785,595
Davis	1,314,540
Irvine	716,455
Los Angeles	3,632,831
Riverside	842,059
San Diego	1,168,945
San Francisco	421,559
Santa Barbara	1,187,925
Santa Cruz	514,732
Others:	
Hastings College of the Law	131,745
Langley Porter Neuropsychiatric Institute	16,046
Total Collections	14,732,432

*For a detailed listing, see the Appendix.

Figure 1

Growth of the Library Collections
University of California
1945-1975



For one thing, the impressive size of the total collections by no means implies that all parts of the University are served adequately; on the contrary, there are serious inadequacies on many campuses which must be overcome. Large portions of the collections are "invisible" to users on other campuses because of the lack of complete bibliographical listings. Facilities on many campuses are desperately overcrowded. Services to users are in many cases inadequate. And librarians, the University administration and the State alike are concerned about the continuing rise in library costs.

These and other problems must be addressed, with urgency but in a systematic way. Lasting and valid solutions will only come, not from quick and subjective recommendations, but from careful analysis of the entire enterprise, consideration of the real needs and requirements, and rigorous examination of the costs and benefits of alternative solutions. This approach, of necessity, involves consultation with many groups within the University and without, continuing research, and ongoing evaluation both of measures adopted and measures proposed.

This plan attempts to begin that process.

CHAPTER II

THE FUNCTION OF THE LIBRARY: AN ANALYSIS

The function of a library is to provide its users with access to information.

It is important at the outset to distinguish this basic function from the activities of a library.[1] These include:

. The selection and acquisition of library materials.

. Cataloging, binding, labeling and otherwise preparing material for use.

. Circulating materials to users.

. Provision of assistance to users through reference services, individualized and group instruction, and preparation of bibliographies.

. Preservation and protection of collections.

. Relations with other libraries and similar institutions to serve users more fully.

. Administration of the library as an institution and organization.

All of these activities are important, but from the standpoint of the user they all contribute, directly or indirectly, to the central function of providing access to information. An analysis of any library--of its characteristics, operations and services--must therefore be based on the components of this function; that is, on:

. the nature of its users;

. the nature of the information needed by the users; and

. the nature of access to the information.

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[1] Most of the literature on libraries discusses such activities in terms of missions, goals and objectives--terms which Crum has pointed out tend to be used either interchangeably or with varying degrees of generality (Norman Crum, Library Goals and Objectives: A Literature Review, Washington, ERIC Clearinghouse on Library and Information Science, 1973, pp. 2-4). Since most of the literature on libraries is written by librarians it is natural that their activities should form the basis for discussion, but it is nevertheless surprising that there has apparently been so little systematic effort to analyze libraries from the users' point of view.

It follows that planning for a library can only be successful if it is firmly based on such analysis.

The Users of the Library. One of the complaints most frequently heard in discussions of library problems is that so little is known about library users. Actually, more is known than is generally realized, thanks to the large number of user studies that have been published during the past half century, particularly during the last decade or so. Martin begins a review of such studies with one by Dana dating back to 1916,[2] and Tobin found a surprising total of 477 indexed in Library Literature between 1960 and 1973.[3] More research is still needed on many aspects of user characteristics and needs, but it is surprising that so little use had been made of the insights offered by studies already conducted.

Some characteristics of the users of the University of California libraries are implied by the discussion in the previous chapter. There are numerically more users than in most comparable institutions, in the first place, because the University is so large. A high percentage are graduate students, and many of the faculty who use the library are eminent scholars with both extensive and intensive library needs. As noted in Chapter I, the University is the primary state-supported academic agency for research, and as a consequence productive research is expected of all regular faculty. Their library use, and that of their graduate students, is therefore strongly oriented toward their research needs.

The established excellence of many of the University libraries also attracts an unusually large number of non-University users to their resources.

The purposes for which users come to a university library are fairly consistent from institution to institution, with most of the differences explained by differences in the character of the institutions themselves. Rzasa and Moriarty analyzed the purpose for which users visited the Purdue University library, by category of user, and found the following as the "most common" reasons:

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[2] Lowell A. Martin, "User Studies and Library Planning," Library Trends, January 1976, pp. 483-496.

[3] Jayne Culver Tobin, "A Study of Library 'Use Studies,'" Information Storage and Retrieval, v. 10, no. 3/4 (March/April 1974), pp. 101-113.

- for faculty, to "do research for a publishable paper or book;"
- for graduate students, to "find and read material for a course;"
- for undergraduates, to "do homework with own books" (with the next most frequent response "to find and read material for a course").[4]

Raffel and Shishko found that the "main purposes" of users of the M.I.T. library were to find "books and materials for research" (76 percent), "to browse and read current journals" (63 percent), and to read "required and recommended" materials (61 percent). Only 20 percent looked on the library as a place to study their own materials, and only 2 percent as a place "to lounge, relax, socialize."[5]

It is clear, then, that for all users except undergraduates, the primary purpose in coming to a library is access to information (of one sort or another), and even for undergraduates this purpose is second only to their desire for a place to study.

The Nature of Information Needed. The information needed by library users falls into three categories:

- brief factual information (for example, the formula of a chemical compound, the population of a city, or the birthdate of a composer);
- information items of which the user already knows the identity (for example, a particular book, journal article, or technical report);
- bodies of recorded information (for example, a collection of books on a given topic, or--as a student might phrase it--"something on" a particular subject), the items themselves requiring examination in person by the user in order to determine their relevance to his needs.

Brief factual information may be found by the user himself in a reference work, or it may be provided by a librarian or library assistant. A study at Yale University of over 5,000 reference desk inquiries revealed that over 6 percent were for specific data. As indicated in Table 6, users also ask for information on use of the card catalog, for recommendations on bibliographical resources, and for a wide variety of general and directional information.

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[4] Philip V. Rzasa and John H. Moriarty, "The Types and Needs of Academic Library Users: A Case Study of 6,568 Responses," College and Research Libraries, v. 31, no. 6 (November 1970), p. 406.

[5] Jeffrey A. Raffel and Robert Shishko, Systematic Analysis of University Libraries: An Application of Cost-Benefit Analysis to the M.I.T. Libraries, M.I.T. Press, 1969, p. 66.

As far as the second and third categories of information--specific known items, and bodies of information--are concerned, academic library users are more likely to want the former, and by a factor of about two to one. Palmer's study at the University of Michigan General Library reported that 70 percent of the users were looking for known items, and a later study at the same library reported a figure of 71.7 percent known-item searches.[6] Palmer's study also indicated that faculty are slightly more likely to want known items than students, as indicated in Table 7. Nelson Associates did a major study in 1969 of the New York Public Library's Research Libraries, which are heavily patronized by academic users, and found much the same pattern.[7] For all academic users, the percentage of known-item searches was 63.3 percent versus 36.4 percent for subject searches. When faculty were distinguished from students, the percentage of known-item searches for faculty was higher, again as indicated in Table 7. An informal study of five libraries on the UC Berkeley campus produced similar results.

As will be evident in later chapters, it is also instructive to note user preference for materials on the basis of the form of material and the language in which it is written. In the Nelson study, academic users had a decided preference for books and monographs over other forms, as indicated in Table 8. The Berkeley study showed a similar pattern, with 52.4 percent wanting books and 38.8 percent wanting journals.

Language of publication has an even greater effect on usage. In Jain's study, almost 96 percent of the materials circulated were in English, 1.5 percent in French, 1.5 percent in German, and all others much less.[8] English-language publications account for more than 85

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[6] Summarized in James Kirkelas, "Catalog Use Studies and Their Implications," Advances in Librarianship, v. 3, Seminar Press, 1972, p. 205.

[7] Nelson Associates, User Survey of the New York Public Library Research Libraries, 1969, pp. A-43, A-45.

[8] A. K. Jain, "Sampling and Short-Period Usage in the Purdue Library," College & Research Libraries, v. 27, no. 3 (May 1966), p. 215.

Table 6

Inquiries at the Reference Department
Yale University Library

Percent of Inquiries by Type

Type of Inquiry	Percent of Inquiries
Data	6.3
Card catalog	26.2
Bibliographic	16.4
General information	11.2
Library directions	19.4
Library procedures & instructions	7.8
Other	12.7

Source: Robert Balay and Christine Andrew, "Use of the Reference Service in a Large Academic Library," College & Research Libraries, v. 36, no. 1 (January 1975), p. 21.

Table 7

Requests for Known Items as a Percentage of Total Requests by Category of User

Category	University of Michigan	New York Public, Research Libraries	U. California, Berkeley
Faculty	79	76.2	69.6
Graduate Student	73	59.4*	65.9
Undergraduate	64		66.7
Total Academic Users	70	63.4	68

*Graduate students and undergraduates not differentiated.

Source: R. R. Palmer, "User Requirements of a University Library Card Catalog," Unpublished dissertation, University of Michigan, 1970; Nelson Associates, *User Survey of the New York Public Library Research Libraries*, 1969, pp. A-43, A-45; and informal survey at five UC Berkeley libraries, 1976.

Table 8

Kinds of Materials Used
by Patrons with Academic Purposes

New York Public Library
Research Libraries

Type of Material	Percentage of Patrons Using
Books and monographs	65.8
Periodicals	37.4
Pamphlets	7.9
Government publications	7.1
Microfilm	6.3
Manuscripts	3.1
Maps	1.6
Other materials	11.7

Source: Nelson Associates, User Survey of The New York Public Library Research Libraries, 1969, p. A-51.

percent of the total circulation at the University of Pennsylvania, with French and German accounting for another 7 or 8 percent.[9] At UCLA, 79 percent of the circulation is represented by English-language materials, 13 percent Romance languages, 4 percent Germanic languages, and all others 2 percent or less. Even at large institutions with extensive research programs, then, usage of English-language material predominates.

To summarize, the majority of the information items needed by academic library users are items the identity of which is already known; more likely to be books or monographs than periodicals or other forms of material; and probably written in English. This is not to imply that materials in other categories are less important, but knowing the patterns of use may help design better ways of handling all categories.

Access Methods. Given the nature of library users and the materials to which they need access, then, appropriate methods of access may be derived.

For brief, factual information--the first category mentioned earlier --a wide variety of informational services is provided by most libraries in the UC system. By all indications, these services function well, although further measures can be taken to enhance them, as discussed in Chapter VII.

For the two other categories of information--known items and bodies of information--the methods of access are presently inadequate, partly because they are not tailored to the characteristics of users and library materials as outlined above, and partly because a new and systematic approach to the satisfaction of user needs is required.

The problems and a plan for their solution are discussed in the following chapters.

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[9] Richard De Gennaro, "Austerity, Technology and Resource Sharing: Research Libraries Face the Future," Library Journal, v. 100 (May 15, 1975), p. 919.

CHAPTER III

THE NEED FOR A NEW APPROACH

Most of the difficulties in meeting the needs of users for specific items, or for information on a topic, arise from the traditional methods employed by libraries. This is true in many areas of library operation, but the problem is perhaps best exemplified by the dominance of what may be called the "acquisitions approach" in providing access to materials.

Once the need for an item is expressed, predicted, or assumed, the almost universal instinct of libraries has been to purchase the item for shelving in the institution's own collections. This immediately involves some time-consuming procedures--collecting more or less precise information about the item, ordering it from a publisher or jobber, performing certain record-keeping tasks once it arrives, cataloging it, labeling and perhaps binding it, and then shelving it. This processing may take anywhere from a month to a year or longer, during which time the item is for the most part completely unavailable, but then the item is (at least in theory) on the shelf and almost instantly available. In actuality, this approach fails to meet the real needs as often as it succeeds, as will be seen, because it ignores many of the characteristics of users and library materials just discussed.

The acquisitions approach has in turn led to the concept of "collection development," a phrase implying that the best way to perform the library's basic function is to develop locally-owned collections, as broad and as large as financially possible. The assumption is certainly the oldest in librarianship, traceable at least as far back as the famous library of Alexandria, which apparently felt it so strongly that all who visited were forced to leave behind any manuscripts they might have in their possession. The goal was comprehensiveness, and the "principle of local self-sufficiency," as Clapp called it,[1] has been a beguiling one for librarians and their patrons ever since. Directly or indirectly, it still forms the basis for most library policy and practice.

The effect of this approach can be seen concretely in the phenomenal growth of university library collections. The growth of the University of California libraries has already been discussed, but the pattern is by no means confined to California. For the fifty-eight university libraries that were members of the Association of Research Libraries during the 50's and 60's, Dix has pointed out that the average annual rate of growth was 10.5 percent over the twenty-year period. "It should be underscored that this rate of growth represents an annual compounding," and that at this rate the size of the average collection doubles "in less than seven years and in two decades grows to about eight times its original size" (italics his).[2] De Gennaro notes that in 1951, "there were only 14 academic research libraries in the United States and Canada with collections exceeding 1,000,000 volumes, three with 2,000,000 or more, and two with over 3,000,000. By the end of the year 1973-74, there were 76 libraries with over 1,000,000 volumes, 25 with over 2,000,000 and 14 with over 3,000,000."[3]

There are strong reasons for this rapid collection-building, in addition to the obvious fact that there was money to do it. For one thing, institutions were growing rapidly during this period, and it seemed logical for library collections to grow commensurately. More importantly, the available alternative methods for providing users with access to information were very poor: traditional interlibrary loan has been increasingly recognized as a completely inadequate substitute except in an insignificant number of cases. "Dependence upon the resources of a distant library involves so much in the way of formalities, delay, cost, and the frustration and indignity of having one's request subordinated protractedly or absolutely to the prior claims of the immediate users of that library, as to make local self-sufficiency infinitely preferable." There is no obligation to the library from which material is requested to perform well, and "the borrower at a distance necessarily takes second place, especially since he does not look up his own call numbers."[4]

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[1] Verner W. Clapp, The Future of the Research Library, University of Illinois Press, 1964, p. 4.

[2] William Dix, "The Financing of the Research Library," College & Research Libraries, v. 35, no. 4 (July 1974), p. 255.

[3] Richard De Gennaro, "Austerity, Technology, and Resource Sharing: Research Libraries Face the Future," Library Journal, v. 100 (May 15, 1975), p. 919.

On the other side of the coin, the large libraries which do the bulk of interlibrary lending have equal cause for complaint (and non-performance):

> Since these major resource libraries are expected to provide interlibrary loan service in a spirit of noblesse oblige and without compensation of any kind, they have never had any incentive to give priority to this costly and difficult activity. Indeed, the more efficient one of these libraries becomes at filling requests the more requests it will attract, until its service again deteriorates to a point where further traffic is discouraged. It is a no-win situation.[5]

Small wonder, then, that users and librarians alike have been unwilling to rely on interlibrary loan in lieu of local collection development, and that "of all recorded circulation, the interlibrary traffic constitutes an almost infinitesimal proportion--an aggregate average of 1.79 percent for colleges and 1.33 percent for universities."[6]

Convenience also plays a strong role, and the "principle of least effort" (especially the preference for libraries close at hand, even if they contain substantially less material relevant to the user than libraries further away) has been well documented.[7] To some extent, the traditional acquisitions approach has probably continued also simply because it _is_ traditional.

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[4] Clapp, pp. 10, 41.

[5] De Gennaro, pp. 921-922.

[6] David C. Weber, "A Century of Cooperative Programs Among Academic Libraries," College & Research Libraries, v. 37, no. 3 (May 1976), p. 217. For UC libraries, the figure was approximately 0.3 percent in 1974/75.

[7] See, for example, Richard M. Dougherty and Laura L. Blomquist, Improving Access to Library Resources, Scarecrow Press, 1974, pp. 2, 64-66.

Despite all this, there is growing evidence that the traditional approach is working less and less well. Even Harvard, which has served for so long as the guiding star for all others, has been forced increasingly to this conclusion. In 1963, the Harvard Librarian remarked that "the Harvard Library today, with its 7,000,000 volumes, is more frequently reminded of its inadequacies than it was 60 years ago when it had only 1,000,000;"[8] by 1974, 11 years later, he had concluded that "the doctrine of self-sufficiency" which "has persistently seduced collectors and readers into pursuing unrealistic objectives and making false assumptions ...is finally coming to be realized for what it is: a will-o'-the-wisp. We are seeing at last the gradual abandonment of this creed, even for the largest of libraries."[9]

One reason, of course, is that there is simply not enough money to pursue this approach. Federal appropriations for college and university libraries under the Higher Education Act have dropped to an insignificant amount, and relatively little of the Federal revenue-sharing funds returned to the states has been used for library purposes.[10] State and local governments have in many areas been forced to reduce library funding, and in other areas the level of funding has at best remained stable. And just at the time that money for libraries has become scarcer, the prices of library materials (especially periodicals and foreign publications) have risen at a rate far in excess of general inflation. A recent study commissioned by members of the book industry itself predicted that the prices of books would rise 70.1 percent from 1972-73 to 1978-79, and that periodical prices would rise 86.2 percent, but that expenditures of college and university libraries would rise only 52.1 percent over the same six-year period.[11] The latter figure is probably optimistic.

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[8] Douglas W. Bryant, "A University Librarian Looks Ahead," 1963 (mimeographed).

[9] Douglas W. Bryant, "The Changing Research Library," _Harvard Library Bulletin_, v. 22 (October 1974), p. 368.

[10] Bruer notes that although libraries were "originally designated as one of the highest priorities in the plan, libraries came out sharing a poor tenth place with community development." (J. Michael Bruer, "Resources in 1975," _Library Resources & Technical Services_, v. 20, no. 3 (Summer 1976), p. 200.

By the beginning of this period--i.e., 1972/73--the pinch was beginning to be felt, and the number of volumes added each year by research libraries has gone steadily down ever since, as indicated in Table 9. At the University of California, the decline started even earlier: in 1970/71, as indicated in Table 10. After that peak year, with one exception, each year's figure for volumes added has been less than the year before, and the rate of acquisitions has now declined to the same level as 1963/64.

In addition to the costs of materials, library operating costs have also continued to climb (for reasons discussed in later chapters), and this makes continuation of the old pattern even more difficult. In 1976, for every volume added to the University's library collections an additional $18.03 in processing and related operating costs was incurred.

Space problems also become acute the longer the acquisitions trend is continued. From 1967 to 1971, the academic library world saw "the greatest flowering of academic library building experience this country has ever known or is likely to see."[12] Even this much building, however, was not enough. One writer has calculated that from 1967 to 1974, some 570 new building projects added space for 163 million volumes, but the aggregrate collection growth over the same time span was 166 million volumes--three million more than could be housed. The space problem at the University of California has become particularly acute, even with the reduced acquisition rate, as Chapter X discusses in detail.

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[11] John P. Dessauer, "Library Acquisitions: A Look Into the Future," Publishers Weekly, June 16, 1976, pp. 58, 66.

[12] Jerrold Orne, "The Renaissance of Academic Library Building," Library Journal, v. 96 (December 1, 1971), p. 3947.

Table 9

Average Number of Volumes Added
by the
57 Academic Library Members of ARL
Reporting for the Period
1965/66 to 1974/75

Year	Volumes Added
1965/66	84,543
1966/67	92,971
1967/68	98,732
1968/69	99,675
1969/70	101,843
1970/71	103,276
1971/72	102,591
1972/73	105,923
1973/74	94,210
1974/75	91,030

Table 10

Volumes Added
to the
Library Collections
of the
University of California

Year	Volumes Added*
1963/64	577,191
1964/65	614,094
1965/66	618,405
1966/67	658,632
1967/68	776,030
1968/69	742,440
1969/70	792,983
1970/71	789,988
1971/72	748,886
1972/73	628,802
1973/74	671,966
1974/75	591,553
1975/76	578,219

*Includes volumes acquired by gift and exchange as well as by purchase.

The attempt to catalog and process the flood of books has likewise become an increasingly difficult task. As De Gennaro points out, the problems may originate in acquisition policies, but they "are only exacerbated by costly traditional processing routines."[13] For each locally-held book, not only must expensive bibliographic searching and cataloging take place, but the catalog cards produced must be filed and the ever-growing catalog must itself be maintained. The extent of this problem is illustrated by the fact that, despite often herculean efforts, there are backlogs of uncataloged books numbering in the hundreds of thousands within the UC system.

Yet even if there were sufficient money available to pursue the traditional "acquisitions approach"--to buy ever increasing numbers of volumes, to catalog them fully, and then to house them--there is growing evidence that the approach itself does a poor job of meeting users' real needs. "As with cooking," comments Buckland, "expenditure on ingredients does not guarantee the quality of the product."[14]

There are several reasons why the approach fails. In the first place as the number of volumes held increases and the size of the collection grows, it becomes more and more difficult to use. "The library goal of comprehensive collecting [and] the social impulse permanently to record events in detail," Rosenthal points out, "have added not only to the bulk of the record, but have reduced to very low levels the rate of use for any given item in many subject categories. More and more of what is collected is actually used less and less."[15]

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[13] De Gennaro, p. 918.

[14] Michael K. Buckland, Book Availability and the Library User, Pergamon Press, 1975, pp. 39-40.

[15] Joseph A. Rosenthal, The Research Libraries Group, 1973, p. 16.

On the other hand, in almost any library there are some titles that are in heavy demand, and are therefore very difficult to obtain. This is particularly true in university libraries, because, as Buckland points out, "investment in the acquisition of duplicate copies tends to be rather arbitrary."[16] Indeed, many university libraries have an explicit policy that the acquisition of a title not already held is to be preferred over the acquisition of a duplicate.

The combination of these two factors means that users must wade through larger and larger collections, yet still--with too high a degree of probability--be disappointed in the end. Several researchers have in fact calculated this "availability rate," as Gore dubs it, and found that in a typical university library it lies between 50 and 60 percent. To put it another way (as he does), this means that the failure rate is between 40 and 50 percent.[17]

This relatively low level of success is generally attributed not only to the cumbersome nature of ever-growing collections and the lack of sufficient duplicate copies, but also to inadequate book selection in the first place and inappropriate loan periods.[18] A more important reason, however, may be that "preoccupation with collection-building" has prevented sufficient attention to "better means of making the collections more accessible at times, places, quantities, and levels appropriate to the needs of people."[19]

Baumol and Marcus have also pointed out that the traditional methods of library operation lead not only to poor performance but to much of the increase in operating costs mentioned earlier.

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[16] Buckland, p. 4.

[17] Daniel Gore, "Let Them Eat Cake While Reading Catalog Cards: An Essay on the Availability Problem," Library Journal, v. 100 (January 15, 1975), p. 94.

[18] See, for example, Buckland, pp. 4, 14, 88; Gore, "Let Them Eat Cake," pp. 95-97; and Gore, "The View From the Tower of Babel," Library Journal, v. 100 (September 15, 1975), pp. 1601-1602.

[19] Dougherty and Blomquist, p. viii.

> The most frequently cited villains--inefficiency and mismanagement--need have nothing to do with the problem... Similar cost trends have been documented in other inflexible labor-content portions of the economy [and] continue through all sorts of economic circumstances.

The problem, they conclude, is simply "a direct consequence of the association between the amount of human effort employed and the range of library services that can be offered," and is "very much a matter of the _technology_ of library operations which, _so long as one adheres to traditional modes of library operation_," are "largely beyond the librarian's control."[20]

Clearly then, it is time for a new approach to library operations, and just as clearly it will be best if the impetus for the new approach comes from within. "Failure of research libraries to take the initiative in making change," Rosenthal points out, "will result in either forced and not necessarily wise change or a subtle erosion of library capabilities. Neither course is acceptable."[21]

The new approach must also be financially realistic; it must be tailored to the significant characteristics of users and information; and it must be systematic.

The system proposed is outlined in the following chapters.

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[20] William J. Baumol and Matityahu Marcus, _Economics of Academic Libraries_, American Council on Education, 1973, pp. 56, 76-77. Italics supplied.

[21] Rosenthal, p. 18.

CHAPTER IV

A UNIVERSITY LIBRARY SYSTEM

From the analysis in the preceding chapters and the literature cited, a number of conclusions may be derived, and these conclusions may then be used as the basis for design of a new library system for the University of California.

1. The University library system must be built on strong and flexible campus library systems, which must provide access to materials needed by users on those campuses, and services tailored to those needs.

2. The building of collections for the University must be an interdependent, collective and integrated enterprise.

3. Provision of needed materials within appropriate time spans must be the primary objective. As Swank has pointed out, "the ultimate criterion of value to the reader is not the size or quality of the local library collection, however important that may be; it is the service he actually receives in terms of the delivery of books and information, regardless of where or how the library gets them."[1]

4. As students and faculty come to rely more and more on materials not held in their own collections, there must be adequate means of knowing about these materials and where they are located. "The first requirement for establishing the unity of the University collection," therefore, "is to provide complete bibliographic access to all users on all campuses," as the Library Policy Task Force stated in 1974.[2]

5. Access to all materials not in one's own library must be quick and reliable. For the University, this means that "the second requirement in establishing the unity of the University collection is

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[1] Raynard C. Swank, Interlibrary Cooperation Under Title III of the Library Services and Construction Act: a Preliminary Study for the California State Library, California State Library, 1967, p. 10; quoted by Charles R. Martell, Jr. in Interlibrary Loan Turnaround Time..., Institute of Library Research, 1975, p. 1.

[2] Report of the Library Policy Task Force, University of California Library Policy to 1980-81, 1974, p. 3.

prompt and ready physical access to the entire collection."[3]

6. Maximum efficiency and minimum "user cost" is likely to be achieved if the available funds are spent on providing more duplicate copies and faster access to frequently-used titles, "rather than on local ownership for faster access to titles infrequently used."[4]

7. The presumptive necessity for immediate availability of all materials must receive closer examination when the cost of providing it is compared with possible alternatives, "particularly when the number of books is extremely large."[5]

Additional Conclusions. To these conclusions may be added two more that must also be considered in designing a new system.

1. The costs of electronic data processing systems, in terms of the units of work performed--i.e., in productivity--have been increasing at a much slower rate than library labor costs, and in some instances have actually been declining, so that the use of computers in libraries offers hope (and in a few instances, actual proof) that the rate of rise in library costs can be substantially lowered. The use of computers, in fact, will be necessary if other changes (such as the provision of complete bibliographic access) are to be accomplished. In Bryant's words, "the changes in libraries which will enable them to provide ever more, and ever more varied, resources for scholarship could not be contemplated without the application of sophisticated and sensitive computer technology to bibliography and library operations."[6]

It is also clear that the use of computers will be most effective as a tool in developing and operating cooperative bibliographic networks, and that the "cost-effectiveness of the localized type of library automation that characterized the 1960s was marginal or even nonexistent."[7] When shared by a number of libraries, however, "on-line computer-based operational programs constitute a radical and permanent change in cooperative style" that "may well be by far the most significant change ever achieved in library operations."[8]

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[3] Ibid.

[4] For a discussion of this point, see Gordon Williams et al., Library Cost Models: Owning Versus Borrowing Serial Publications, National Science Foundation, 1968, p. vi.

[5] Herman H. Fussler and Julian L. Simon, Patterns in the Use of Books in Large Research Libraries, University of Chicago Press, 1972, pp. 1-2.

[6] Douglas W. Bryant, "The Changing Research Library," Harvard Library Bulletin, v. 22 (October 1974), p. 370.

2. The collections of the library system as a whole must be comprehensive, and as distinguished in quality as the University served. Only if the libraries can build and maintain a web of specialized, in-depth collections of materials serving and supporting fully the research interests of the University's scholars and students will the library system become and remain great.

In this connection, it is important that the analysis of the function of the library as a source of information, as discussed in Chapter II, not be interpreted superficially. Obviously the libraries of the system must be more than mere filling stations for information; they are integral parts of the educational process, and for many students the education that takes place in the library can be as important as what takes place in the classroom. For many disciplines, the libraries serve as the principal laboratory for research, and of course for literary scholars books are not simply means to informational ends, but objects of study in themselves.

The collections of the libraries also serve as archives of knowledge, as reservoirs of information maintained indefinitely into the future, and available at all times for research and instructional support. Unless the archival function is preserved, valuable and even crucial information may be lost to society, an event that has happened all too frequently in the past.

Immediacy of Need. Several of the foregoing conclusions--especially those that relate to the need for acquisition programs geared to users' needs--are easier to implement for single institutions than for libraries within a system, while others--for example, the conclusions regarding the need to share resources and computer technology--presume the existence of a system. What is needed to combine all of the elements implied by the nine conclusions is a final element--an element that curiously has been ignored by library research, at least as reported in the literature--and that is consideration of the *immediacy* of each user's needs. Clearly if the presumption that all materials must be immediately available is abandoned, some differentiation in response to users' requests will result, and this differentiation can most appropriately be made on the basis of how quickly the material is needed.

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[7] Richard De Gennaro, "Austerity, Technology and Resource Sharing: Research Libraries Face the Future," Library Journal, v. 100 (May 15, 1975), p. 918.

[8] David C. Weber, "A Century of Cooperative Programs Among Academic Libraries," College and Research Libraries, v. 37, no. 3 (May 1976), p. 219.

This conclusion in turn suggests that if the *materials* can be differentiated by immediacy of need (either actual or predicted), a system of differentiated response may be designed that would be more economical than present library methods, but more responsive to users' needs. As indicated in Chapter X on housing of the library collections, there are several studies which indicate that the likelihood of items being circulated can be predicted with reasonable accuracy by such factors as the date of last circulation and language, and that furthermore total use (including use within the library) is highly correlated with circulation. It therefore appears feasible to design a system of differentiated library response based on immediacy of need in combination with the other factors previously discussed.

A Multi-Level System. Clearly such a system must consist of multiple levels, in contrast to the present concentration on a single one, the campus library. As Budington notes, "a first principle of successful planning for access requires that those records in *constant* demand be acquired by each level of resource where such a demand exists --in the personal library if essential to that person, in a shared or institutional library where the combined needs of several persons create continuous need, and so on to the final level where, theoretically, a single record is enough for all present and foreseeable future use."[9]

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[9] William S. Budington, "Access to Information," in *Advances in Librarianship*, v. 1, Academic Press, 1970, p. 8.

In the chapters which follow, six levels of organization are proposed, with a desired response time at each level. For each, appropriate methods of identification and location of material, delivery and use of material, acquisition and processing of material, information services, staffing, housing, organization and governance are also described. Each of these topics is treated in a separate chapter, but the general characteristics of the system are outlined in Table 11 and described briefly below.

Department and College. On all campuses, there are libraries that exist primarily for the purpose of serving particular departments and colleges. They range in size from a few hundred randomly-assembled volumes and current issues of key journals to organized research collections with hundreds of thousands of volumes. Organization and governance of these libraries vary, but in general they fall into two types: departmental reading rooms, supported normally by departmental funds and donations, and branch libraries, usually (but not always) a part of the campus library system.

Departmental reading rooms are described in more detail in Chapter VI, but their primary function should be noted here. Because they typically house basic reference works, standard monographs, and current issues of key journals, they provide an important means of access to library materials needed immediately. As Dougherty and Blomquist have shown, the distance from a researcher's office to a library has a marked and demonstrable effect on his use of the library,[10] and a small departmental library or reading room is often the only feasible way to provide effective access to materials in the "immediate" category.

On large campuses, some decentralization of the campus library system may also be necessary to provide effective service to users. Normally this decentralization is accomplished through the development of branch libraries, either for large and relatively well-defined subject areas (such as medicine) or for general disciplinary areas (such as the sciences).

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[10] Richard M. Dougherty and Laura L. Blomquist, Improving Access to Library Resources, Scarecrow Press, 1974, pp. 44, 49, 78.

Table 11

Outline of the University Library System

Level	Response Time	Identification & Location	Delivery & Use	Acquisition & Processing	Housing	Organization & Governance
Department & College	Immediate	Manual & on-line	Primarily in library	Manual & on-line	Departmental & branch libraries	Independent or campus-based
Campus	One day	On-line terminals	In person & campus mail	On-line terminals	Campus libraries	Campus-based
Region	Two days	On-line terminals	Bus or in person, campus mail	Shared acquisitions; on-line processing	Regional facilities & campus libraries	Shared by regional members
University	One week	On-line terminals	UPS, bus & campus mail	Shared acquisitions; on-line acquisitions & processing	Regional facilities & campus libraries	Steering Committee & Systemwide Administration
National	Two weeks	Various; some on-line	U.S. mail & UPS	On-line processing; some cooperative acquisitions	National Lending Library or CRL	Membership in organizations; national influence
International	One to six months	Primarily book-form catalogs & bibliographies	Photocopy or film by air	Various	Various	Participation in international organizations

Campus. A campus collection should contain material likely to be needed within one day, and all material needed to support the instructional programs of that campus. In addition, each campus will have special collections and major resources for research, particularly in disciplines or programs that receive heavy emphasis on that campus. The stronger such research collections are, of course, the more they must be considered a central resource for faculty and students on other campuses, so access to all who need them must be assured.

The primary means of identifying and locating material within campus collections will be by public consultation of on-line terminals connected to a computer-controlled bibliographic data base. The advantages of this approach are discussed later, but it should provide much more effective bibliographic access than at present. Cataloging will be done through use of on-line systems which provide momentary access to large data bases for this specific purpose. No change in the organizational arrangements or governance of campus libraries is contemplated or required.

It should be emphasized that the plan does not intend a leveling or homogenization of campus library systems. There will continue to be major collections of research materials and specialized resources on the campuses, because they serve important research needs not only on the campuses but throughout the University.

Region. Two regional systems are proposed, one in the North and one in the South. Each region should contain, either on one of the campuses within the region or in a regional compact shelving facility, materials likely to be needed within two days or less. To facilitate joint use of the collections within a region, existing arrangements for direct borrowing of materials on other campuses will be continued and improved, and the intercampus bus system will also be continued. Materials within the region will be identified through on-line terminals, and delivered to the campus libraries by the intercampus bus service.

In addition to little-used materials for which space no longer exists on the campuses, the regional facility will also contain important research materials which can be shared throughout the region;

typically, these will be large sets of primary research materials, the cost of which prohibits their acquisition by each campus, and only a single copy of which is needed because the use (although important when needed) is expected to be relatively low. Selection and acquisition of these materials will be made by a committee of collection development officers under procedures already established and in operation. It should be noted that the combination of campus resources and special materials acquired on a regional basis, all made available (both physically and bibliographically) almost as easily as campus collections, will provide far richer resources for both teaching and research than now exists on any single campus.

Regional systems will be governed by a board consisting of the University Librarians within that region, with an advisory committee composed of faculty, administrators and students. The staff of the regional facility, which should be small, will report administratively through a director to the Executive Director of Library Planning, as the systemwide library automation activities in Berkeley and Los Angeles do at present.

Universitywide and State. Northern and Southern regional systems must be closely coordinated in order to provide all materials likely to be needed within one week. The present system of delivery between the Northern and Southern regions must be improved through a direct and scheduled United Parcel Service link; in addition, UPS will be used between any two campuses not in the same region.

Materials within the University library collections will be identified and located by the use of on-line terminals, connected via computer to a machine-readable bibliographic data base already under construction. Some materials will be acquired for the entire University system in a single copy, but located in one of the two regional facilities, again through procedures already in effect. Cataloging of all materials will be by a single on-line computerized processing system, which will provide information on materials on order and in process throughout the University in order to prevent unintentional and unnecessary duplication.

Policy guidance for the University system will be provided by the Library Policy Steering Committee, which forwards recommendations for major changes in policy to the Academic Vice President, and through him to the President. Coordination of day-to-day operations of the systemwide library automation and research activities will be accomplished through the office of the Executive Director of Library Planning.

The University will also continue to take an active, participating role in statewide agencies such as the California Library Authority for Systems and Services (CLASS), in order to carry out its responsibility to provide materials and services needed by faculty, students and other users in California, to the extent that these activities do not conflict with the library system's primary mission of service to the University. Cooperative arrangements with the California State University and Colleges and numerous regional arrangements with other institutions of higher education throughout the state will be continued, again with the goal of maximizing the services of the University to the state.

National. Little-used materials to which access is needed only within two or more weeks may be obtained through national systems now in existence or proposed. The report of the National Commission on Libraries and Information Science suggests "expansion of the lending and lending-management function of the Library of Congress to that of a National Lending Library of final resort."[11] An earlier report commissioned by the Association of Research Libraries recommended a "National Periodical Resources Center with a comprehensive collection...to improve access to the periodical literature."[12] Both ideas have merit, and the University will continue to lend support to these planning efforts, in order to help insure that, insofar as possible, a single copy of every item likely to have scholarly interest is retained and available within this country.

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[11] National Commission on Libraries and Information Science, Toward a National Program for Library and Information Services: Goals for Action, 1975, p. 67.

[12] Vernon E. Palmour et al., Access to Periodical Resources: A National Plan, Westat, Inc., 1974, p. 2.

To some extent, the Center for Research Libraries in Chicago is already performing some of the functions envisaged for the two national centers proposed; in many categories, important primary research materials are stored, preserved and lent as needed to member institutions. Materials not circulated within ten years after they are deposited in one of the two UC regional facilities should be moved to CRL, from which they can be borrowed in the event they are ever needed in the future. The Center also carries on a number of programs to acquire specialized research materials which are then made available to its members. Full membership in the Center is not necessary for participation in many of these programs, but all of the University's libraries should be able to take advantage of the full range of storing, lending, preservation and acquisition programs offered by the Center. Assuming the Center's expansion plans are funded so that space is available for the storage program, the University should therefore join the Center on a systemwide basis.

Except from CRL, borrowing of materials nationally is at present too cumbersome to be more than marginally effective, and substantial changes must be made in present interlibrary loan procedures in order to make the nation's library resources more available. The University's libraries should not only participate in this effort, but should continue to provide leadership as in the past.

National systems for identification and location of material, on the other hand, are becoming much more effective, and systems such as the Ohio College Library Center not only provide better means of processing materials but also enable greater sharing of resources. As noted in subsequent chapters, the University will contribute to and benefit from these systems. The University libraries are already making use of information systems which are national in scope, including data-base searching systems such as those offered by the Systems Development Corporation, Lockheed and the New York Times, and these activities will continue.

Librarians from the University have contributed significantly to the organization and leadership of national library programs, and this important contribution should of course continue to be encouraged and supported.

International. On the international level, only the British Library's Lending Division provides access services that contribute significantly to the UC libraries' ability to carry out their function. Materials are of course acquired or borrowed from other international sources, but the time required and the cumbersome nature of the methods involved limit the effectiveness of activities on this level. As many writers have noted, there is much room for improvement here, and UC libraries may be expected to make contributions on this level as well.

Advantages of the System. The advantages of the multi-level system described are many, and are further elaborated in subsequent chapters. They may be summarized briefly as follows:

1. Through the use of technology already available, a much greater percentage of the library material available can be identified and located.

2. Improved delivery systems will be able to provide materials within the time frame needed and much more often than at present.

3. The resources made available through the combination of these two techniques will be much greater and much richer than any campus-based system could conceivably provide.

4. Use of a single cataloging and processing system will permit much greater coordination of acquisitions and provide the best means of constructing a systemwide bibliographic data base to facilitate identification and location of materials.

5. Regional facilities will provide housing for little-used materials in a more cost-effective way than continued reliance solely on campus building programs, and will help deliver such materials throughout a region more efficiently than if they continued to be dispersed.

6. Coordination of systemwide library activities will provide the optimum library service with the funds available.

In order for the system to realize these advantages, however, it must be able to perform within the guidelines mentioned, at each level, and performance must be continuously monitored to ensure that users' needs are being met. All of those involved, both library staff and users, must thus be allowed to share in its development, governance, and operation. Measures which are demonstrably ineffective must be abandoned and new ones devised, so that the system is constantly refined for maximum responsiveness. And finally, adequate funds must be provided so that no part of the system fails to play its role.

Only under these conditions can there be a library system worthy of the University of California.

CHAPTER V

IDENTIFICATION AND LOCATION OF MATERIALS

From the standpoint of the user, the library's first significant task is to provide him with the means of identifying the materials he needs, or if these items are already known, to locate them.

The Card Catalog. For the past century, the library's principal method of doing this has been the card catalog. The large cabinets with the 3" by 5" cards have been so ubiquitous that to most users and librarians alike the catalog is the *sine qua non* of librarianship. Yet today the card catalog is in trouble in most large research libraries, and in fact has become an endangered species. The New York Public Library closed its card catalog several years ago, replacing it with a computer-produced book catalog, and a number of other libraries, including the Library of Congress, have announced plans to close their catalogs as well. In the University of California, the Berkeley and Los Angeles campuses have had a series of committees studying the desirability of a similar step for the last several years.

There is, in short, a growing feeling that the card catalog has become, in most large institutions, an unwieldy and ineffective device. There are many reasons, but the main one is simply that they *have* been around for so long, and that fact alone contributes to their awkwardness and complexity. The Berkeley catalogs, for example, were started in 1876, about the time other libraries began to switch from the older, book-form catalogs. As was the custom, the cards were painstakingly written out in "library hand," and some of these cards are still to be found in the catalogs. The University Librarian at the time (Joseph C. Rowell) commented when he first proposed the card catalog that "it has been suggested... that use of the 'typewriter' be made in making the catalogue--if this be practicable, it is needless to recommend it, and to say that no time will be lost on my part in gaining the knowledge and power to handle the instrument."[1] Despite Rowell's resolve, the typewriter was not used for Berkeley's card catalog until 1902.

Now one hundred years old, the Berkeley catalogs contain some 8 million cards, and reflect "the problems of size, encrustation, and complexity that the span of years, differing policies, and a variety of working methods have evolved.... Largeness, coupled with many types of brief, limited, and special slips and cards both temporary and permanent, location designations and symbols, techniques and procedures, many of which have become outmoded, constitute a very complicated tool for users and staff alike."[2]

There are other reasons as well for re-examining the efficacy of these huge catalogs:

. Filing into them becomes more and more complex the larger they grow; for research libraries, a fair-sized book is required just to record the rules for filing. As all but the most unsophisticated users know, the arrangement is not strictly alphabetical, and there are dozens of special arrangements, and files within files.

. The user, not ordinarily having access to the book of filing rules, must guess at where the rules may have caused the entry he is seeking to be placed. As the size and complexity of the catalog grows, he becomes markedly less successful, as numerous catalog use studies have shown.

. This problem in turn requires an investment by the library in training or assisting users to cope with the catalog, and the users must make a similar investment in time.

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[1] UC Library *Report*, quoted by Janice Knouse, "Main Library Catalogs," Berkeley, May 1974, p. 3.

[2] Virginia Pratt *et al*., "To Close or Not to Close," Berkeley, The General Library, 1975, p. 1.

. By its nature, the catalog is immobile and realistically can exist only in one copy; hence the user must come to it, rather than vice versa.

. The cards are subject to theft, and the thefts are difficult to detect; that is, neither the librarian nor the user has an obvious indication that something is not there which should be--unless the theft is a large one, as when UCLA lost all the cards on India.

. The cabinets and associated tables require substantial amounts of space.

. The catalog is almost inevitably out of date, because of the delays inherent in the manual tasks of preparing cards and filing them.

. The process of maintaining the file is labor-intensive and hence becomes increasingly more expensive as salaries rise.

. Perhaps more important, "card catalogs tend to become increasingly inhospitable to large-scale change, even highly desirable change."[3] Merely updating a single subject heading to more modern terminology can be a very expensive proposition by the time all of the cross-references and other parts of the syndetic structure of the catalog have been corrected.

The Need for Systemwide Bibliographic Information. For the University of California, there are additional problems posed by the current reliance on card catalogs as the primary device for identification and location of material. The University has determined that "the library holdings of all campuses should be considered a single University collection rather than nine separate collections,"[4] but effective use of the unified collection obviously cannot be made unless users know what is in it, and where it may be obtained. Accordingly, the Library Policy Task Force report pointed out, "complete bibliographic information about the entire University collection should be available to any users on any campus," and "complete bibliographic access should receive the highest planning and budgetary priority."[5]

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[3] Ibid.

[4] Report of the Library Policy Task Force, University of California Library Policy to 1980-81, 1974, p. 2.

At the present time, the University is far from this goal. An author-title catalog of the Berkeley collections and a dictionary catalog of the Los Angeles collections were published in book form in 1963, and a University of California Union Catalog covering the catalog records produced by the nine campuses during the years 1963-67 was published in 1972, but obviously these catalogs represent only a fraction of the total holdings, and a steadily declining fraction at that.

On-Line Catalogs. For both of these reasons--the decreasing effectiveness of the card catalogs on the campuses, and the increasing need to provide bibliographic information on the totality of the University's holdings--a completely new approach is needed. The best alternative appears to be one which has been recommended by committees at both UC Berkeley and UCLA, and by staff members at the Universitywide Library Automation Program (ULAP) who have been studying its feasibility for some months: an on-line, computerized union catalog. Under this alternative, users will consult terminals connected directly to a large, machine-readable data base of information on the University's holdings. By keying in brief information (such as author, title, or subject) users will be able to determine whether the University has the items wanted, and (just as importantly) where they are located.

There is growing evidence that such on-line systems are both feasible and acceptable, even desirable, to the public. A newcomer to the Lawrence Hall of Science is invariably impressed with the enthusiasm of visitors for the many on-line terminals provided for public use, and the fact that the terminals can be used with no more instruction than is printed on the front of each device and then revealed, step by step, on the screen. Educational institutions are finding such systems increasingly valuable for teaching some types of courses, and many UC faculty, students, and researchers have used them successfully in other contexts.

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[5] *Ibid.*, pp. 2-3.

On-line terminals have also become widely used in libraries, but in most cases it is only the staff members who may use them. A few libraries, however, have allowed public use of such terminals, and successfully so. For example:

. At Ohio State University, terminals originally designed as part of a circulation system have been placed next to the card catalog, and are heavily used; in fact, users often prefer to use the terminal first before attempting the card catalog. Instructions in use of the terminal are provided on the terminal itself.[6]

. At the Library of Congress, readers in the Science and Technology Division may now use terminals to search the entire MARC (Machine-Readable Cataloging) data base of over 700,000 records, and the same system is used to allow Congressmen and their staff members to search seven other data bases as well. Approximately 1,000 searches per day are now being made by the public using the on-line system.[7]

. The library at the IBM Los Gatos Laboratory has had an on-line catalog since 1971. It is used on a regular basis by a small, specialized clientele, who are of course on the average more accustomed to computers and terminals than academic library users. However, the library staff has noted that visitors of all ages and backgrounds are able to search the catalog easily and comfortably; only on the part of older adults have they noted any reluctance to use the system.[8]

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[6] Mary Kay Daniels Ganning, "The Catalog: Its Nature and Prospects," Journal of Library Automation, v. 9, no. 1 (March 1976), p. 64.

[7] Library of Congress Information Bulletin, July 9, 1976, pp. 401, 407; and conversation with William Nugent, Library of Congress Information Systems Office.

. At the University of Cincinnati, faculty members and students have been using terminals originally designed for cataloging by the library staff; because of space problems, some of these terminals had been placed in a public area and the public simply began using them. At first they operated the terminals with no instruction at all, although now the library provides minimal assistance. The library staff reports that some patrons are able to find items using the terminals that they are unable to find using the card catalog. Most persons spend only a few minutes at the terminals, but some faculty members come in every week or so to search a list of items.[9]

. And at Case Western Reserve University, the same type of terminals are being heavily used by patrons, who have a decided preference for them as opposed to the card catalog. They are "always in use" and popular. Instruction sheets are placed at the terminals; "people pick them up, read them, and are searching five minutes later. They rarely ask for help."[10]

The On-Line Catalog at UC. In the system proposed for the University of California, users will be able to search on the terminals by author (in full form, or the last name only, if that is all the user knows); by title, or any significant word in the title; by title of the series, if the work is part of a series;

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[8] From a conversation with Ruth Winik and Marjorie Griffin of the library; see also Ruth Winik, "Reference Function With an On-Line Catalog," Special Libraries, v. 63 (May/June 1972), pp. 217-221, and Caryl McAllister and John M. Bell, "Human Factors in the Design of an Interactive Library System," Journal of the American Society for Information Science, v. 22 (March-April 1971), pp. 96-104.

[9] From a conversation with Sue Tyner, University of Cincinnati.

[10] From a conversation with Esther Greenberg, Case Western Reserve University.

and (for those items which have been fully cataloged) by subject headings. In addition, the user will be able to combine these elements of his search using simple "and," "or" and "not" relationships, i.e., with so-called Boolean logic. For example, the user might search by requesting materials on "Puerto Ricans" AND "Housing" AND "New York City" but NOT materials published before 1972; or if he thought the author were Johnson or Johnston, he might request "Johnson" OR "Johnston," AND "Nautical Astronomy" AND "Navigation." The results of the user's request will be displayed almost instantaneously on the screen of the terminal, and will give the basic bibliographic information about the item or items requested. Normally the display will show those items housed on the user's campus which satisfy his request; however, if the needed items are not found, or if the user wishes to see what resources of interest are available elsewhere, depressing another button will display all holdings within the region which satisfy his request, along with information on the location of the materials: i.e., campus, library, and call number. If desired, the user may also display the systemwide holdings of interest, or specify that the holdings of particular campuses be displayed. If the user wishes to borrow one or more items located on another campus, a borrowing request may be initiated immediately through the terminal.

The terminals themselves will be placed not only in UC libraries, but in other places where there are concentrations of potential library users, such as major campus buildings, dormitories, and student centers. Some terminals will also be provided with print-out capabilities so that the results of a search can become a printed bibliography. In the libraries, some terminals will be equipped to display diacritics for foreign languages, and users needing this capability will be directed to them by printed guides and by instructions received through the other terminals. Depending on certain technical considerations, it may also be possible for departments already owning terminals used for other purposes to use them for access to the library data base as well.

At each library location, staff will be available to provide instruction in the use of the terminals, and brief printed guides will also be available. However, the experience with such systems to date indicates that the most effective method of instruction is through the terminal itself; the user need only press a "begin" or "start" button, and the computer programs provide step-by-step instructions on the screen. Audio cassettes may also be coupled to the terminals to provide verbal instruction to accompany the screen display. In addition, the terminals will contain "help" or "panic" buttons which when pressed will help the user by providing information about the search so far, offer solutions to snags which the user may have encountered, or enable him to return to an earlier part of the search.

Investigations at UC Irvine indicate that much can be done to make the use of computer terminals comfortable and inviting through attention to human engineering factors. For example, it is not necessary for users to "log" on and off, or to learn special codes or language. Straightforward English can be used, and no familiarity with computers is necessary. Careful wording of instructions and the liberal use of graphics, flashing displays, bold type and other devices can help make the use of the terminal clear, and attention to the environment in which the terminals are placed also has a positive effect.[11] By careful consideration of such factors, and by learning from the experience of other libraries that have used on-line terminals, the University should be able to construct a system that is both acceptable to library users and more efficient.

Advantages of the On-Line Catalog. The advantages of such a system are manifold:

1. It can be much more nearly complete than existing catalogs, providing "immediate access in a single location to all records,

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[11] From a conversation with Alfred Bork, UC Irvine; see also Alfred M. Bork, "The Computer in Learning--The Ordinary Mortal," Proceedings of the AFIPS National Computer Conference, 1973, pp. M43-44.

in-process as well as permanently cataloged, which are at present dispersed among many files in various locations."[12]

2. It can be much more up-to-date than any other alternative: card catalog, book catalog or microform catalog. (And there is some evidence that scholars have been waiting for libraries to take such a step primarily for this reason; in 1967, the American Council of Learned Societies commented in a report that cataloging was too slow, and that "clearly it is now reasonable to expect that research library catalogs will eventually move from card files into computerized form."[13])

3. It can be much more accurate, since corrections and changes in headings can be made readily. "The imminence of widespread changes in entries and subject headings makes this a particularly important potential."[14]

4. It allows for a system of automatic "authority control," that is, for insuring that consistent terminology is used for all headings.

5. For the user, it allows faster catalog searching. Ohio State estimates that "as many as seven or eight automated searches can be completed in the same amount of time it takes to complete one manual search."[15]

6. It provides multiple access points (the terms under which a search is made), not just the initial words of the headings chosen in the cataloging process.

7. The access points may be combined to limit or define a search more precisely using Boolean logic techniques.

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[12] Judith Corin et al., "Final Report, Working Group on Public Catalogs," UCLA Library, 1976, p. 1.

[13] American Council of Learned Societies, Committee on Research Libraries, On Research Libraries: Statement ... to the National Advisory Commission on Libraries, Washington, 1967, p. 28.

[14] Corin, p. 2.

[15] Ganning, pp. 63-64.

8. Several entries can be displayed on the screen at one time, so that the system facilitates browsing.

9. The filing rule problems are eliminated, both for librarians and users, since the computer accomplishes both the "filing" and retrieving automatically.

10. The system is more flexible than a card catalog, allowing for a variety of display formats.

11. The system "can easily produce printed or microform bibliographies, serials lists, lists of recent acquisitions, etc., for all library users."[16]

12. The same terminals may also be used to provide access to other data bases, including specialized ones devoted to particular disciplines.

13. The system can provide benefits in other library operations; for example, Ohio State finds that it helps reference librarians and collection development officers to check standard bibliographies against the university's holdings to assure that important works are not overlooked for purchase, and conversely to assure that items already owned by the system are not needlessly duplicated.[17]

14. The catalog is more "portable," i.e., terminals can be installed at various locations on campus, even in dormitories and offices.

15. The terminals occupy less space than card catalogs, and there is greater flexibility in providing space for them because they can be distributed to various locations.

16. The interactive nature of on-line systems makes it easier to provide guidance to the user in finding and locating the material he needs.

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[16] Corin, p. 2.

[17] Hugh C. Atkinson, "The Ohio State On-Line Circulation System," Proceedings of the 1972 Clinic on Library Applications of Data Processing, University of Illinois, 1972, p. 27.

17. An on-line system can change attitudes of both librarians and users toward library service, since information is made available so much more readily. From a systemwide point of view, it is also important to note that such a system "serves to change the concept of library services for library staffs and users. Their view of available materials expands beyond the local collection--and a sense of interdependence is fostered."[18]

The On-Line Data Base. The data base most frequently consulted by users of the on-line system will consist of catalog records, not only for monographs but also for serials, cataloged documents, and any other materials cataloged by the campus libraries. The machine-readable records themselves will be accumulated from several sources. By the end of the academic year 1976/77, almost a million machine-readable records for materials cataloged since 1973 will be available from previous and current projects of the Universitywide Library Automation Program, from the computer-produced book catalog project at UC Santa Cruz, and from computer-produced book catalog supplements at UC Berkeley and UCLA. Most UC libraries are now using the on-line technical processing systems described in Chapter VIII to catalog current materials, and records for the Universitywide data base are produced automatically as a by-product of these activities. By 1981, the plan anticipates that all campuses will be cataloging current materials using such systems, so that the remaining task will be the conversion to machine-readable form of catalog records for older materials, and the creation of records for materials which have never been cataloged. In order for these records to be useful, conversion must of course be done carefully and with high standards of quality control, so this task will necessarily proceed on a gradual basis, concentrating on those materials that are likely to be most in demand.

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[18] Ruth J. Patrick and John W. Aubry, Guidelines for Evolving a Governance Structure for a Northern Regional Library System, University of California, 1975, p. 89.

When the on-line system for public use is initiated in 1981/82, however, over 4 million records will be available for consultation and the number of records in the on-line catalog will grow steadily from that point. In answer to a request via the terminal, the user will first receive brief, identifying information, as indicated earlier. If he desires further bibliographic information, the terminal will instruct him to do one of two things. If the item is represented by full cataloging information in machine-readable form, it will instruct him to press a button, and the screen will present the full information. If only brief, locational information has been placed in the data base, the terminal will instruct the user to consult a particular record in a microfiche file near the terminal.

The Microfiche File. The microfiche file will consist of full cataloging records that have not yet been converted to machine-readable form, but that have been filmed so that the information can be available at the same locations as the terminals. The microfiche file will be in a "register" format--that is, with records simply added in sequence as they are filmed--rather than in an alphabetical arrangement, and the terminals will indicate the location of the appropriate records within the microfiche file. This is by far the most economical way of making this cataloging information available, because it means that the file does not have to be re-compiled and re-published periodically, as an alphabetical arrangement would.

The microfiche file will also serve another important function: as a back-up to the on-line system in case of system failures. Multiple processors are contemplated for the on-line catalog system, so that it is unlikely that the complete system would be unavailable for any significant period of time, but there will inevitably be breakdowns in particular terminals and in communication links. There may also be times when the number of terminals available is insufficient to handle the demand from users. For all of these reasons, it is important to have an alternative means of identifying and locating library materials. To serve this purpose, the microfiche register will contain not only all cataloging records that have not been converted to machine-readable form, but all those that have been converted as well. If the on-line system is inoperable, all of the records will be accessible through an index which will include entries for authors, titles, subjects, and titles of series. Copies of the index will be placed at each terminal, and copies of the register will be available in each room or area where there are terminals.

Phasing of the Project. In order to minimize costs and provide for an orderly transition from present methods of bibliographic access, the production of the on-line union catalog will be spread over a period of time. Some of the component parts already exist, as has been indicated earlier. The existing Bibliographic Data Base project will have produced approximately a quarter of a million records by the end of the current (1976/77) year, and another quarter of a million will be available as a result of use by the campuses of on-line technical processing systems. The Union List of Serials project has already compiled a data base of serial records contributed by the campuses, and is adding others through its participation in the externally-funded CONSER (Conversion of Serials) project.

These efforts will all be continued, but will contribute to and eventually be merged into the on-line union catalog project. The complete phasing of bibliographic projects is outlined in Table 12. As indicated, the initial effort will be concentrated on conversion to machine-readable form of current cataloging records from 1973 to date. Until the on-line union catalog is operational, the Union List of Serials will continue to be published, and several interim union catalogs of monographic holdings, consisting of records converted to date, will also be produced. In the meantime, specifications for all elements of the on-line system will be developed, and a pilot system will be tested in 1980/81. Assuming successful operation, the initial system will be put into use the following year. All user searching programs will be available by 1982/83, except for the Boolean search capability, and the system will be available to users during all hours the libraries are open. Conversion of records from 1973 to date will also be completed by this time, and current records from that year forward will be added to the data base as an automatic by-product of the technical processing systems in the campus libraries. By 1983/84, the

Table 12

Phasing of Bibliographic Project Elements

Project Element	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86
Conversion of Records	Conversion & receipt of record tapes from campuses	Continue conversion & receipt of record tapes from campuses	Continue conversion & receipt of record tapes from campuses	Conversion of records since 1973 completed	All current records received from campuses	All current records received from campuses	All current records received from campuses	All current records received from campuses
Data Base Size	1.2 million records	2.0 million records	3.0 million records	4.2 million records	4.7 million records	5.2 million records	5.6 million records	6.0 million records
Development of On-line System	Implementation of authority control system	Development of pilot system	Installation of pilot system	Begin operation of initial system	Operation during hours libraries are open	Full operation on 24-hour basis	Full operation	Full operation
Hardware for On-line System	Propose system configuration	Detailed specifications, evaluation & selection	Leased time on vendor supplied hardware	Installation of initial system	Minor system additions	Installation of additional processor	Minor system additions	Installation of additional processor
Software for On-line System	Propose software system configuration	Detailed specifications	Software design and/or selection	Basic search and file management programs completed	User search programs completed	Boolean search capability added	Interface to campus circulation systems	Full operation
Communications	Propose configuration of communications network	Detailed specifications	Determination of sites on campuses	Network connections to all campuses	Correction of any communication problems	Upgrading of trunk lines & some campus lines	Upgrading of trunk lines & some campus lines	Upgrading of trunk lines & some campus lines
On-line Terminals	Installation of terminals for conversion of records at campuses	Selection of public access terminals	Testing of 5 public terminals at developmental site	Installation of 25 terminals at pilot sites at campuses	Installation of 25 additional public terminals	Installation of 100 additional public terminals	Installation of 250 additional public terminals	Installation of final 200 public terminals
Authority Control System	Establish UC authority file and develop system	Begin computerized authority control system	Authority control system on-line	Authority control system transferred to campuses	Authority control system operated on campuses	Authority control system operated on campuses	Authority control system operated on campuses	Authority control system operated on campuses
Microform Products	Union catalog of converted records; Union List of Serials	Union catalog of converted records; Union List of Serials	Register and index; Union List of Serials	Register and index; ULS merged into on-line catalog	Register and index	Register and index	Register and index	Register and index

Boolean search feature and another 100 terminals will have been added, and the system will be available for users on a 24-hour basis. During the following two years, additional terminals will be installed, and the system will then be complete.

Relationship of the On-Line Catalog and the Microfiche File to Existing Card Catalogs. During the phases described above, the relationship of the on-line catalog and microfiche file to existing catalogs will gradually change. During 1978/79 and 1979/80, union catalogs of records already converted will be published in microfiche form, but these catalogs will be produced primarily for the purpose of facilitating greater inter-campus use of materials and expediting inter-campus loans. Beginning in 1980/81, however, the microfiche register will become a major bibliographic tool for the library user, and by 1981/82 it will have progressed to the point that campus libraries can rely on it as a catalog of current materials. By 1984/85, the on-line catalog will become the primary means of identifying and locating recent materials, and the microfiche file will then assume the supplementary and back-up role described earlier. At this point, it is expected that all campuses will have ceased maintaining card catalogs, using them only for reference to information not yet in the on-line catalog or the register.

System Components. Several components of the system should be explained further. The analysis to date indicates that a combination of several mini-computers will be more cost-effective in supporting the system than a large, general-purpose computer, and the costs are estimated on that basis. This approach also has the advantage that if one computer is down, the others can continue to operate the system.

Much of the programming needed is either available already, or can be adapted from existing systems. There are three major types of programs involved--data base management programs, inquiry or search programs, and network control programs--and software of each type already exists. Much will need to be done to integrate these programs or to "re-implement" them in the UC system, but it is not contemplated that a completely new on-line system will be developed and programmed from scratch.

Fortunately, a wide variety of terminals is also available, and at increasingly reasonable prices. The standard terminals envisaged by the plan are estimated to cost approximately $1,500. Those with the ability to display diacritics are estimated at $4,000, and those with both diacritics and the capability of printing hard copy are estimated at $6,000. The number of terminals required is estimated on the basis of the best information currently available, but this aspect is receiving continued study to make certain that serious queuing problems do not occur. The system itself will be designed to handle up to 1600 terminals in order to provide for any future expansion deemed necessary.

Alternative Systems Considered. In evaluating the feasibility of the on-line catalog project outlined above, several alternative courses of action were considered, and at least one should be mentioned here. This is the possibility of using existing on-line systems, designed for library cataloging and other technical processing, as the basis for the on-line public catalog at UC. There are several such systems, and staff members have visited and examined all of them. The two most likely candidates are those described in detail in Chapter VIII: the Ohio College Library Center (OCLC), and the BALLOTS (Bibliographic Automation of Large Libraries using On-line Time-Sharing) system at Stanford University. Despite some possible advantages, the idea of using one of these systems for the on-line catalog had to be rejected, however, for the following reasons:

1. Neither system is designed for use by the public, and the most widely-used one (OCLC) does not have provision for searching by subject, nor does it display local call numbers.

2. The terminals required for use of these systems are more expensive because they must provide capabilities needed for library cataloging (but not for public inquiry), and the total cost of the on-line catalog if these terminals were used would be millions of dollars more.

3. Representatives of both OCLC and BALLOTS indicated that neither system has the capacity to absorb the 600 or more terminals needed for the UC on-line catalog, and even if it were possible for

them to handle this additional workload it would seriously degrade their performance as technical processing systems.

The recommended strategy, then, is to use either OCLC or BALLOTS to construct the on-line data base of UC catalog records, as described in Chapter VIII, but to use a different system, with different terminals, for public searching and consultation of that data base.

Costs. The estimated costs of the bibliographic projects proposed are shown in Table 13. As noted, the Union Catalog and the Union List of Serials are shown as separate projects until 1981/82, when they will be combined into the on-line catalog project. Costs are estimated to 1987/88 in order to indicate the steady-state costs which will be incurred from that date forward to maintain the system.

Offsetting savings in staff and efficiency are not shown, and are included in the staffing calculations in Chapter IX. However, staff committees at Berkeley have estimated savings at approximately $375,000 per year for that institution alone,[19] and extending that on a proportional basis to all campuses would indicate that the on-line system should save about twice as much as it costs. Assuming these savings are used for conversion of retrospective records, it should still be possible to operate the system without net increases in costs, once the development period is completed; certainly it would appear that in the long run the on-line method is likely to be a much more economical method of operation for the University's libraries than its present card catalogs.

The development costs are admittedly large, but Baumol and Marcus, in their landmark study of the economics of academic libraries, caution against letting the high initial costs obscure the long-range economic benefits:

> A major impediment to a change in library operations turned out to be the cost of the electronic equipment itself and

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[19] Mary Blackburn et al., "The 'Ideal' Catalog," Berkeley, The General Library, 1975, p. 7, and Russell Gardiner et al., "Proposed Plan for Catalog Cutoff with Access to Bibliographic Data Through On-Line and Computer Output Microform," Berkeley, The General Library, 1975, p. 12.

Table 13

Total Estimated Costs of Bibliographic Projects*

Year	Union Catalog	Union List of Serials	On-line Catalog	Total
1978/79	$1,001,000	$408,000	$ 53,000	$1,462,000
1979/80	1,188,000	230,000	217,000	1,635,000
1980/81	1,063,000	97,000	779,000	1,939,000
1981/82			968,000	968,000
1982/83			526,000	526,000
1983/84			893,000	893,000
1984/85			1,227,000	1,227,000
1985/86			1,357,000	1,357,000
1986/87			735,000	735,000
1987/88			739,000	739,000

* Includes the Union Catalog and the Union List of Serials as separate projects until 1981/82, when they are combined in the on-line catalog.

> of its operation. The investment in purchase or rental of the equipment is enormous... Moreover, sophisticated equipment requires the use of highly skilled personnel for maintenance, operation, programming, and so on, and such personnel are never cheap... However, the long-run trends--if they continue to behave as in the recent past--are likely to change the cost relationship dramatically and may conceivably do so more quickly than is generally expected.[20]

They go on to suggest that within a relatively short period of time "electronic substitutes" will become more and more economical as compared to manual means, and the trends since their book was published have substantiated their conclusions.

The most important reason for implementing such a system are the benefits to the users, however, as enumerated earlier. Chapter IV pointed out that the University library system must be responsive to user needs at multiple levels, and it is therefore appropriate at this point to consider how each level of use would be affected, and what other means of identification and location of material will be necessary, in addition to the on-line system.

Branch. Until the on-line system is fully developed, it is assumed that branch libraries will continue to maintain their card catalogs, although as one committee has pointed out these are "exceedingly costly to maintain."[21] However, the plan anticipates that some of the larger branches will have terminals connected to the on-line system by 1984/85, and all of them by 1985/86.

At present, branch libraries' card catalogs typically contain cards only for the holdings of that branch, and provision of information on the total holdings of the campus system should prove an enormous advantage; no longer will it be necessary for users to go physically to the main library in order to check the campus's holdings.

It should be pointed out that it is possible for even the smallest branches to install typewriter terminals for a very modest cost, and thus to have access to the system. It will also be possible for departmental offices and even individual faculty members' offices to have such terminals, so that some bibliographical research and list-checking can be done even without leaving the office. The goal of "immediate" availability at this level is thus easily achievable.

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[20] William J. Baumol and Matityahu Marcus, Economics of Academic Libraries, American Council on Education, 1973, p. 58.

[21] Pratt, p. 32.

Campus. Most of the advantages cited earlier apply at the campus level. All users on a campus will benefit from having information on all works located on that campus, especially if the campus is decentralized, and all users will benefit from having the catalog up-to-date and accurate. The fact that the system will provide much faster and more efficient searching will also help realize the goal of same-day access to materials held on campus.

Regional and Systemwide. From the regional and systemwide point of view, such a system is more than merely beneficial--as pointed out earlier, it is essential if all materials in the University library system are to be used as one collection, and it is for this reason that library policy groups have consistently emphasized that the union catalog project must have top budgetary priority. For materials placed in regional facilities, as discussed in Chapter X, it is also important that effective bibliographic access be provided if the potential usefulness of these materials is not to be lost completely.

State. At the state level, the on-line UC system will also have important implications for CSUC, for other segments of the state higher education system, and indeed for all types of libraries. It is doubtful that a large number of terminals could be added in other institutions without seriously degrading the response time of the system, but the data base created for the on-line union catalog system will be made available to CLASS (the California Library Authority for Systems and Services), and will undoubtedly form the largest part of the bibliographic data base proposed for that organization. All members of CLASS--public libraries, special libraries, and private colleges and universities, as well as other segments of public higher education--will thus benefit directly from the investment made by the University in constructing and maintaining its data base.

National. On the national level, there is currently an immense amount of discussion and debate about what is generally referred to as "the emerging national network." The papers on the topic number in the dozens, and whole conferences are held on the subject. For the most part, however, what is envisaged is a means of sharing bibliographic information between libraries, or systems to which libraries belong. Most of these systems are based on on-line cataloging or technical processing systems, and are not designed for users of libraries. For the near future, then, the user is likely to identify and locate material on the national level by consulting a member of the library staff, who will then use a terminal connected to one of the national cataloging systems to find the needed material. The user may then initiate a request to borrow the item by interlibrary loan, although as noted in the next chapter this method of delivery has many deficiencies.

Indirect use of technical processing systems, however, is not the only means by which users of the UC libraries can rapidly identify needed materials which may be located elsewhere in the country. As discussed in Chapter VII, there are a number of specialized machine-readable data bases made available by commercial or governmental institutions, and these may be searched either directly by students and faculty members, or used with the assistance of library staff members. These on-line services help materially in identifying both monographs and periodical articles that users may need, but because the data bases are incomplete (particularly for older materials), it will still be necessary in the foreseeable future to rely on more conventional tools as well; that is, on catalogs in book form and bibliographies. These include the National Union Catalog (in its various segments), the national Union List of Serials and the supplementary New Serial Titles, and a host of more specialized bibliographies.

International. Outside of the United States, the two countries most active in developing machine-based bibliographic services are Canada and Great Britain. The National Library of Canada has given "top priority to the creation of a national bibliographic data base capable of interfacing with other national data bases,"[22] and has established a service which ships machine-readable cataloging records weekly to subscribers. The National Library has also decided to automate its card catalog, a decision it says was "inevitable, as the catalogue can no longer be cost-effectively maintained manually because of its size."[23] Great Britain also has a service that provides machine-readable records by subscription, and the British National Bibliography is produced by machine techniques.

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[22] National Library of Canada, Annual Report of the National Librarian, 1975/76, p. 8.

In addition to Great Britain and Canada, France and Australia have machine-readable bibliographic information available, and there are bibliographic centers at work on similar projects in Belgium and Sweden.

These records can all be added to data bases accessible by UC faculty and students, and the number of such records will grow, but obviously it will be necessary for some time to rely primarily on printed bibliographies and similar tools to identify and locate materials not in this country. As more and more foreign materials are acquired, cataloged, and added to the American MARC tapes by the Library of Congress, however, this will become less and less of a hindrance. University library staff members can also encourage the development of international bibliographic systems through their participation in international professional groups.

Summary. In summary, the plan recommends:

1) That the University move rapidly to establish a machine-readable bibliographic data base of its library holdings throughout the system;

2) That access to this data base be provided by on-line terminals;

3) That the University's librarians encourage, insofar as possible, similar developments on a national and international scale.

These steps should provide for timely response by the library system to the user's first need--identifying and locating materials--and, at each of the six levels mentioned in the previous chapter, should allow a response tailored to the immediacy and level of his need.

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[23] Ibid., p. 9.

CHAPTER VI

DELIVERY AND USE OF MATERIALS

Once the user has identified the materials he needs, the next task of the library is to provide for their delivery and use. Again, the methods should be tailored to the level of response, which in turn should correspond to the immediacy of need.

Department and College. Materials which are likely to be needed immediately should be available where they can be delivered or used immediately, or at least momentarily. On large campuses, this may require a departmental library or reading room, at least for certain types of materials, such as basic reference works in the discipline and current issues of key journals.

Dougherty and Blomquist have described what is probably the typical reading room situation:

> Departmental reading rooms are generally supported through donations, either monetary or material, from members of the faculty, from departmental supply budgets, or from research grant overheads. If staffed at all, the rooms are entrusted to the care of the secretarial staff and/or graduate students.[1]

The most common functions performed by the rooms are:

. to house basic reference works and treatises in the field, and to provide a place where they can be consulted quickly and conveniently;

. to allow faculty and students to keep abreast of publications in key professional journals;

. to provide a place to put material on reserve for classes, especially material that belongs to a faculty member rather than to the library system; and

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[1] Richard M. Dougherty and Laura L. Blomquist, Improving Access to Library Resources, Scarecrow Press, 1974, p. 69.

. to serve as a meeting place for faculty and students.

In a few cases, of course, departmental reading rooms become branch libraries, some of which grow to impressive proportions. Beyond the scope outlined above, however, diseconomies often begin to occur, and scholarship suffers as well. The convenience of branch libraries is beyond doubt (at least for the users in that discipline who are housed nearby), but there is considerable evidence that a decentralized system may hamper rather than help research--including research in those disciplines with branches. In the study of Syracuse and Ohio State previously cited,

> even when a branch was provided, the materials relevant to the branch's stated scope of subject coverage were widely dispersed throughout the system. The poor match observed among users, materials, and branches was particularly evident among the sciences. All but five of the 24 researchers interviewed from the sciences had access to a branch library associated with their disciplines. Nonetheless, all of those sampled had to consult a minimum of four different locations to achieve full exposure to documents of interest, and in many cases their materials were scattered among up to 12 different locations.[2]

Dougherty and Blomquist found in addition that there was no significant difference in the percentage of relevant documents to which researchers were exposed whether they had a branch library or not. Following their actual use patterns, those with a branch were exposed to 82.6 percent of the relevant documents, and those without a branch to 83.4 percent. They concluded that there was no evidence to support "the belief that branch libraries provide greater physical access to relevant materials," despite "the proprietary feeling faculty have toward their branch libraries," and that "the concentration of relevant materials through decentralization may not significantly improve the user's access to potentially relevant materials."[3]

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[2] Dougherty and Blomquist, p. 77.

[3] Dougherty and Blomquist, pp. 77-78.

At the departmental and college level, therefore, the plan recommends:

1) That existing departmental reading rooms and libraries be continued, to the extent that they provide access to key reference works, treatises, and journals that are likely to be needed by faculty and students in particular disciplines for immediate consultation;

2) That the establishment of new branch libraries be discouraged; and

3) That existing branches be retained until and unless they can be consolidated into centralized campus facilities economically.

Campus. Materials likely to be needed within one day should be available for use at the campus level. By current methods, however, this response time is often difficult to achieve, for several reasons. The material may be difficult to locate, particularly when bibliographic records are dispersed in a variety of files and catalogs, although the bibliographic projects described in the previous chapter should help remedy this problem. The availability of the book for use is also difficult to ascertain on many campuses because of the outmoded circulation systems in use. And even if this information can be obtained, the work desired may be inaccessible simply because it is already on loan to another borrower. Both of the latter problems are discussed in detail below.

Circulation Procedures. As the report of the Library Policy Task Force published in 1974 noted, circulation policies and practices are urgently in need of revision to improve accessibility for on-site users. In 1976, it was still necessary for users on eight campuses of the University to fill out a "charge card," manually, for each item they wished to withdraw. This required writing out the call number, author, title, and publication date for the items, and (on each card) the user's name, address, and status. In some libraries, it was also necessary for the patron to sign each card as well. For the user, this is a laborious practice that is no different from library procedures a century ago, and it constitutes a significant waste of time.

Beginning in 1976, the University began to change this situation dramatically with the installation of modern, automated circulation systems. These systems require only that the user present an identification card with a bar-coded label (similar to those now seen on many grocery products), along with the books he wishes to charge, which also contain labels. Charging out the books is accomplished by use of a "light pen," a device shaped like a fountain pen which bounces light off the labels, translates the reflection into machine code, and transmits the information to a computer. Passing the light pen over the bar-coded labels requires only two or three seconds per book.

An added advantage to these systems, beyond the convenience to the user, is the fact that the transaction data and all other circulation information is in machine-readable form, and can be consulted via online terminals. The system's files retain information on all library materials, once that information has been entered, and the location of any item can thus be obtained, whether or not it is charged out at the moment. The specifications for the systems now being installed by the University call for eventual linkage of all nine campuses, so that it will be possible to ascertain the availability of any item throughout the University.

A third benefit of the automated circulation system is that it accumulates much valuable statistical information which can be used for library management purposes. Statistics are cumulated not only on individual items circulated, but also on the number of items circulated within broad and narrow subject classifications. The confidentiality of the individual borrower's identification is protected, but information is available on circulation patterns broken down by several categories of users. As this information is accumulated over the years, it can be used to modify acquisition policies, circulation policies, and other library procedures so that service to the user is maximized.

A final but indirect benefit of these systems is that they provide a means of eliminating one of the most unpleasant and fruitless aspects of library operations, the collection of fines. As a number of studies have concluded, fines do not accomplish the purpose for which they are presumably intended--the return of books on time. In fact, one writer has pointed out that the amount of income taken in by the library in the form of fines is itself an index of the failure of the system, because it measures the extent to which users have paid the fines rather than returning the books.[4] Another disadvantage of the fine system is that it operates unfairly, causing hardships for students who are both forgetful and poor, but acting as no deterrent at all for students who can afford to keep the books as long as they wish, regardless of the needs of other borrowers. Until now, however, there has been no other method available to encourage prompt return.

The advent of on-line circulation systems makes other sanctions possible. The systems can be set so that when a borrower becomes "delinquent"--usually when a certain number of books are overdue for a certain period of time in excess of the normal allowance--the computer will not complete any further charging transactions for that person. Instead, when the delinquent borrower attempts to charge out more materials, he is told that he must return the ones already on loan before others can be borrowed. The University of Manitoba, the University of Houston, and others have made this change successfully, to the satisfaction of students and library staff alike. The former perceive the new system as much fairer, the library staff notes that it is more effective at achieving the return of books, and the library is spared an odious and time-consuming chore which has always had a negative effect on its public relations. As the new systems are implemented, UC campuses should also consider such a change.

The first of UC's new automated circulation systems was installed at UCLA during the summer of 1976, and the second at Davis in October. Santa Barbara and Riverside will install the systems during 1977. The plan recommends that installation on other campuses continue at a rate which will insure that all campuses are equipped with the systems by 1980.

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[4] Dorothy McKibbin, "On-Line Circulation Control: Three Years' Experience," Canadian Library Journal, v. 31 (June 1974), pp. 214-230.

In the experience of other institutions that have used the particlar system being installed by the University, it can be operated without increased costs, and even with some savings, but there are start-up costs associated with purchase and installation of the equipment. The exact costs vary from campus to campus because of the varying number of terminals required and differences in the size of the files that must be maintained, but the average installation cost is approximately $200,000. Under a policy adopted in 1976, half of the start-up costs are budgeted systemwide, and half by the campuses. For this purpose, then, $300,000 should be budgeted in 1978/79, and $100,000 in 1979/80, for purchase and installation of automated circulation systems on the remaining campuses.

Loan Periods. The effect of loan periods on the availability of library materials at the campus level must also be considered. Buckland has noted that "for the individual borrower, a long loan period is desirable," but

> for everybody else, this borrower's lengthy loan period is inconvenient because there is always some probability that someone else may want that particular book. The longer the borrower retains it, the longer it is absent from the shelf and the less chance anyone else has of finding it immediately when they want it. For everyone, except the borrower, a shorter loan period is more convenient. The fact that every library user plays both the role of borrower and the role of "everybody else" does not remove this conflict of interest.[5]

The problem is complicated, he notes further, by several factors:

1. "The level of demand varies enormously from book to book or, to put it another way, the probability that a book will be sought whilst it is out on loan varies greatly."

2. "Inducing the borrower to return a book soon is not the only way of reducing the frustration of other would-be borrowers because one can always provide another copy. Duplication is clearly an acceptable alternative strategy."

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[5] Michael K. Buckland, Book Availability and the Library User, Pergamon Press, 1975, pp. 55-56.

3. "If the book is not on the shelf, then it can still be made available by means of a reservation and, if appropriate, by recalling it," but "this cumbersome procedure of reservation and recall is clearly unsuitable for those who are not seeking a specific title but are browsing, perhaps purposefully, for inspiration or amusement."

4. "Administrative aspects must also be considered since not all loan and duplication policies are equally easy to administer."

5. "Similarly, it is essential to consider political aspects" because the policies "have to be acceptable to the public served."[6]

Buckland concludes that:

1. "For any given loan period, the chances of a copy being on the shelves when sought varies inversely with the popularity."

2. "For any given popularity, the length of the loan period and the immediate availability are inversely related."

3. "For any given level of immediate availability, the popularity and the length of the loan period are necessarily also inversely related."

4. "Increasing the number of copies available, like shortening the length of loan periods, increases immediate availability."[7]

From this analysis, it is clear that "the cardinal rule of library stock control is that both the loan period and the duplication policy should be related to the level of demand for the title and to each other."

Buckland also points out that the librarian can control three regulations "which together constitute a loan policy":

1. The official loan period for a given category of user.
2. The number of renewals permitted.
3. The maximum number of books that a borrower may have out on loan at any given time.

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[6] *Ibid.*, pp. 56-57.

[7] *Ibid.*, pp. 57-58.

Examining user behavior in regard to these controllable factors, he found, first of all, that users tended to return books (or renew them) at the end of the loan period, regardless of how long that loan period was, regardless of the status of the borrower, and regardless of the subject matter of the books; secondly, that the frequency of renewal is affected little or not at all by the length of the official loan period; and thirdly, that limiting the number of books a borrower may borrow is of limited usefulness in controlling availability. The length of the loan period was clearly a key factor, then, and "the librarian has, in his ability to determine official loan periods, a powerful and precise control mechanism for influencing the availability of the books in his library."[8]

Using data collected at the University of Lancaster Library and a computer simulation model, Buckland and his colleagues then instituted a policy of varying loan periods on the basis of demand, and increasing the number of duplicate copies for popular titles. The results were immediate, remarkable, and ample proof of his theoretical conclusions: circulation, which it may be assumed is a rough measure of the number of items users find that are of interest or value to them, increased approximately 50 percent per capita at the same time that the total user population was also increasing rapidly.

Clearly the techniques described by Buckland provide a useful tool for increasing user success rates, and are related to the "immediacy of need" concept described in Chapter IV. Increased purchases of duplicate copies for popular titles as a technique for increasing user success is discussed in Chapter VIII, but variable loan periods should also be considered as a means of providing better access to library materials. The statistics gathered by the automated circulation systems discussed earlier will provide information that will be useful in identifying titles for which the loan periods should be either shorter or longer.

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[8] Ibid., p. 88.

At the campus level, then, the plan recommends:

1) That the program to install automated circulation systems on each campus be continued at a rate that will complete this program by 1979/80; and

2) That loan periods for library materials be varied based on the demand for those materials, using data gathered by the circulation systems.

These measures in combination with improved bibliographic tools should make it possible to assure that all materials likely to be needed within one day are made available within that time frame in a high percentage of cases.

Region. All materials likely to be needed within two days should be available for delivery and use within the Northern and Southern regions of the University.

Delivery and use of library materials within these regions has been carried on by special procedures for many years, but only within the last two years have these procedures been improved to the extent necessary to meet a two-day delivery goal. In 1961, President Kerr approved an Intercampus Exchange Program, two features of which have led to much more effective regional sharing of resources. One is the Intercampus Library Copying Service, which provides funds for photocopying of materials for intercampus use, in order to reduce the need for expensive and unnecessary duplication of material; the other is the Intercampus Bus Service, a system of jitney buses operating daily between UCLA and the other campuses in the South, and between Berkeley and other campuses in the North.[9] These jitneys transport library materials within the regions, and also transport faculty and students, both for library use and for other academic purposes. The costs of the copying service and the bus service in 1976/77 are indicated in Table 14.

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[9] The exception is San Francisco; intercampus transportation between Berkeley and San Francisco is provided by a vehicle funded from other programs, and used primarily for communication between the computer centers.

Table 14

Allocations in 1976/77 for Library Copying Service and Intercampus Bus Service

Campus	Library Copying Service	Intercampus Bus Service
Berkeley	$ 40,900	$ 17,800
Davis	6,400	34,700
Irvine	2,000	27,700
Los Angeles	53,800	3,900
Riverside	3,700	33,700
San Diego	5,600	39,900
San Francisco	5,800	--
Santa Barbara	3,000	29,900
Santa Cruz	800	32,400
Total Allocations	$ 122,000	$ 220,000

The allocation to the Los Angeles campus for bus service provides that campus's portion of the costs of a cooperative program for sharing resources between UCLA, the California Institute of Technology, and the University of Southern California. The allocation to Berkeley is for a new jitney service from Berkeley to Davis which has proven very successful. It started in January of 1976, and is already being used by Berkeley campus members who need to use the Davis library, or have other business in Davis, and by the Berkeley library to borrow materials from Davis. A surprising result has been that the Berkeley campus now borrows about as much material from Davis as vice versa, and the time to obtain materials has been drastically reduced. An important benefit to library users is that if they require more time than the jitney in one direction allows, they may stay overnight and take the other jitney back to their home campus.

The jitney service has freed intercampus lending from dependence on the U.S. mails, and has reduced the time required for transporting materials between campuses from several days to one. A study by Thompson in 1975, however, indicated that there are several other sources of delay in delivering materials between campuses, all of which prevent effective sharing of resources. In the Northern region, Thompson found that even with the use of jitneys, the average elapsed time for delivery of material from Berkeley to the other Northern campuses was 10.4 calendar days and 11.4 calendar days if a photocopy was required or desired. From the other Northern campuses to Berkeley, the time was similar: 11.5 days, and 11.2 days with photocopying.[10] The sources of delay were found to be in at least five areas: transmission of requests; receiving requests and checking them; paging and retrieving the materials; and preparing the materials for shipment to the requesting campuses. His conclusions were that "most of the intra-regional delays occur in-house, in the borrowing and lending libraries,"[11] and result from the fact that schedules of the different library units involved are not synchronized with the various mail services, and that traditional interlibrary loan procedures involve a variety of time-consuming clerical and bibliographic tasks.

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[10] Donald D. Thompson, Interlibrary Lending and Intercampus Photocopy: A Study of User Demand and System Response Among Northern University of California Campuses, Berkeley, University of California, 1975, pp. 4-5.

Further Measures to Improve Regional Access. These problems and the delays involved have been of increasing concern to librarians and administrators in both the North and the South, and a number of efforts have been made in recent years to overcome them. Specifically, projects have been initiated

. to improve internal procedures;

. to speed transmission of requests by the use of teletypewriters (TWX);

. to provide for direct borrowing (that is, permitting users from one campus to borrow materials in person from other libraries, rather than going through the interlibrary lending procedures); and

. to establish proxy borrowing (that is, using the driver of the jitney or another staff member to borrow materials by proxy for users on the home campus, again avoiding interlibrary loan procedures).

Other measures aimed at improving cooperative use of collections have also been instigated, as detailed below.

In 1974, the five campuses in the Southern region began a program to provide direct borrowing for all students in that region, a program that has been successfully continued since that time. Undergraduate students are included, a significant step because they are specifically excluded from regular interlibrary loan by the provisions of the national Interlibrary Lending Code. The Southern projects also established uniform procedures for handling returns, and a "round robin" system that provides for automatic routing of interlibrary lending requests among the five Southern campuses and Davis.

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[11] Ibid, p. 21.

In the meantime, work was also under way in the North. In the Spring of 1974, the Chancellors from the Berkeley, Davis, and Santa Cruz campuses agreed that better coordination of library activities in the North was essential, although these initial discussions focused on the need for cooperative housing of materials, as discussed in Chapter X. In January of 1975, a subcommittee of the Steering Committee on Systemwide Library Policy Implementation identified a number of objectives for the Northern region, and recommended five studies bearing, in one way or another, on the problems of access to materials. In April, 1975, this subcommittee also adopted a set of "Fundamental Planning Assumptions for Regional Library Planning in the North," among which was the statement that "a direct borrowing system is to be established to enable users on various campuses in the regional system to borrow directly and quickly from each of the libraries in the system. The objective would be to establish one- or two-day service between libraries, if the requested item is in the stacks."

By June of 1975, a group of library staff members from the Northern libraries had met and adopted a set of guidelines for direct borrowing, so that this procedure was from that time forward in effect for both regions. By October 1975, the arrangement was in effect systemwide.

In 1976, a further step was taken when Santa Cruz and Davis established "expediter" positions in the Berkeley library. These staff members meet the jitney buses from their respective campuses; take the borrowing requests for the day; locate the material wanted in the Berkeley library system; check it out; and put it on the return bus the same day. By this technique, the regional transportation time has been reduced to less than one day, assuming the material is available for loan. In 1977, two permanent expediter positions will be established, one in the Berkeley library and one in the Los Angeles library, solely for the purpose of handling loan requests from the other campuses.

At this point, the steps which have so far been accomplished to improve delivery and use of materials within the two regions may be summarized as follows:

1. Request transmission has been speeded up by the use of TWX, and (in the South) by use of the "round robin" system mentioned earlier.

2. Internal procedures for handling inter-campus loans have been streamlined on some campuses, and priority given to such loans.

3. Direct borrowing procedures are now in effect for students from all nine campuses.

4. Some special materials, notably maps and documents, are lent directly between the library departments involved, bypassing interlibrary loan procedures.

5. Jitneys are used to speed transportation of materials between campuses, and in some instances either the driver or another staff member acts as proxy for borrowers from the home campus.

There are still further steps that need to be taken, however. TWX should be used for transmission of all requests, and when the on-line public catalog system described in Chapter V is implemented it should take over this function, providing even greater speed and avoiding cumbersome manual procedures. Special forms and containers for inter-campus movement of materials would allow faster processing, and improvements in the campus mail systems would expedite retrieval of materials from branch libraries. It also appears that inter-campus loans would be expedited, at least on some campuses, if the procedures and staff involved were completely separate from traditional interlibrary loan activities.

For delivery of materials at the regional level, then, the plan recommends the following:

1) That TWX be used for transmission of all inter-campus lending requests until this function is assumed by the on-line catalog system;

2) That internal handling procedures within each library continue to be studied with a view toward expediting them as much as possible;

3) That direct borrowing by faculty and students continue to be encouraged;

4) That materials be transported between campuses (and other locations, such as the regional facilities discussed in Chapter X) via jitney buses;

5) That proxy borrowing services be provided in connection with all jitney buses;

6) That the use of "expediters" at the larger campuses be expanded as necessary to achieve same-day return of loan requests.

With these steps, it should be possible to deliver a high percentage of all materials needed regionally within 48 hours.

Systemwide and State. Materials likely to be needed within one week should be available for delivery and use within the UC system. Such materials should also be available within this time frame to libraries of the California State University and Colleges and other institutions of higher education in the state, to the extent this does not seriously handicap the University's ability to make the materials available to its primary clientele.

To a large extent, the problems associated with meeting this goal are the same as those discussed in the previous section, except that the delays are longer because of the greater distances involved. The Thompson study found that an inter-campus loan between the Southern campuses and Berkeley averaged 17.3 days.[12] When non-UC institutions are involved, it takes even longer; for example, Martell found that the average time for loans between Sacramento and Berkeley was 20.7 days, even though both these institutions are in the Northern region.[13] As Martell comments, this is approximately the same time reported by similar studies in other parts of the nation. The problem, as discussed below, is largely the requirements of the national interlibrary loan code, and the fact that (as one writer put it) "meticulous attention is paid to the minutiae of bibliographic form."[14]

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[12] Thompson, p. 7.

[13] Charles R. Martell, Jr., *Interlibrary Loan Turnaround Time: A Study of Performance Characteristics of the University of California, Berkeley, Interlibrary Loan Lending Operation*, Institute of Library Research, Berkeley, 1975, p. 8.

Fortunately most of the steps outlined in the previous section have improved the response time systemwide as well as within the regions. In addition to the steps taken, however, two others are needed: TWX should be used for all requests, regardless of region, and United Parcel Service should be used instead of the U.S. mails. UPS, in fact, should be used for all inter-campus lending traffic between any two campuses not in the same region, not just between Berkeley and Los Angeles and the Northern and Southern regional facilities discussed in Chapter X. A committee of the Library Council which investigated this possibility estimated that the total cost of systemwide use of UPS would be $14,000, a small price indeed to pay for the improvement it would provide in the availability of resources.

In order to prevent loss of materials and to make material-handling as efficient as possible, specially-designed and specially-marked containers should be used for delivery of all inter-campus library materials.

The CSUC system has recently devised a separate system of request transmission and materials delivery and, through the initiative of the CSUC Learning Services Development Division, formal arrangements are being negotiated to tie the UC inter-campus system and the CSUC system together at both Berkeley and Los Angeles.

Other agreements are in effect for expedited delivery service between UC campuses and Stanford University, the University of Southern California, California Institute of Technology, and the Huntington Library in San Marino.

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[14] Lura Gibbons Currier, Sharing Resources in the Pacific Northwest, Washington State Library, 1969, p. 24.

At the systemwide and state level, then, the plan recommendations are as follows:

1) That TWX be used for transmission of all requests, and for notification to requesting libraries of material not available.

2) That United Parcel Service be used for transportation of materials between campuses not in the same region, using specially-designed containers;

3) That UC and CSUC staff continue their efforts to provide efficient interlibrary loan services between their respective campuses.

With these measures, it should be possible to insure that most materials needed within one week are made available for use within that time.

National. All materials likely to be needed within two weeks should be available nationally.

The most common method of meeting the need for materials outside a region or state has been the traditional interlibrary loan procedure mentioned earlier. This method is no longer adequate to meet the two-week goal or, in fact, to provide effective support to scholarship. The problem has been growing rapidly in the past decade, and has received increasing attention nationally, not only because of the delays involved but also because of several equally serious problems.

For one thing, there has been a growing imbalance in the traffic between large libraries and smaller libraries. The statistics for the 88 academic members of the Association of Research Libraries for 1974/75 reveal the problem: 438,095 items were borrowed, and 1,536,501 were lent--three and a half times as many. The pattern for the UC libraries is similar: for 1975/76 the UC campuses borrowed or received 49,800 items, and lent or supplied 144,180 items, almost three times as much. The economic consequences of this imbalance are perhaps clearer when one realizes that the average cost of an interlibrary loan transaction, as estimated in one recent study, is \$6.39.[15]

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[15] Vernon E. Palmour and others, A Study of the Characteristics, Costs, and Magnitude of Interlibrary Loans in Academic Libraries, Westat, Inc., 1972.

Because of the imbalance and cost, the system is becoming less and less effective. As pointed out in Chapter III, the large libraries are expected to provide the service without compensation, regardless of any imbalance, so there is no incentive to assign a high priority to the activity. Efficiency in filling interlibrary loan requests merely encourages more requests, until the increase in workload causes the service to deteriorate to the point that requests are again discouraged.

> Filling free interlibrary loan requests has always been treated by the large netlenders as a troublesome extra, and this, along with the cumbersome nature of the decentralized system, accounts to a large extent for the relative slowness and inefficiency of this activity in the U.S.[16]

Not surprisingly, a few research libraries are beginning to charge for the service. The effect is likely to increase the load even more on those libraries which still provide the service free, and if for no other reason than a defensive one the University of California libraries should consider instituting such charges. Clearly, a national agreement on a standardized fee is needed, but attempts by such organizations as the Association of Research Libraries to devise a fee system have so far been unsuccessful. If an increasing number of individual libraries begin charging on their own, however, this may serve as a sufficient goad to produce a national agreement.

Some kind of national system is clearly needed, because no library, nor even a system such as proposed for the University of California, can expect to meet all of the legitimate library needs of its users. In economic terms a national system is also desirable, because as Williams' study has pointed out, "it is apparent that for every publication there is some frequency of use at which it becomes cheaper for the library to borrow, or photocopy, it from another institution than to acquire and maintain its own copy."[17]

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[16] De Gennaro, "Austerity, Technology, and Resource Sharing: Research Libraries Face the Future," Library Journal, v. 100 (May 15, 1976), pp. 921-922.

[17] Gordon Williams and others, Library Cost Models: Owning Versus Borrowing Serial Publications, Office of Science Information Service, 1968, p. 1.

Several alternatives have been proposed. As noted in Chapter IV, the report of the National Commission on Libraries and Information Science has suggested "expansion of the lending and lending-management function of the Library of Congress to that of a National Lending Library of final resort."[18] The Association of Research Libraries had earlier commissioned a report, published in 1974, which evaluated three possibilities for a national periodicals system:

1. A single new facility with a comprehensive collection;
2. A new multi-location national system based on a number of satellite resource centers with dedicated collections of the most heavily-used titles; and
3. A regional resource network based on designated existing library collections.

The study projected demand estimates and costs, and concluded that the first alternative, the single national center, appeared to offer the best solution. At the ARL meeting in May of 1976, the Joint Committee on a National Periodicals Lending Library reported that it felt this study to be "the most authoritative work on the subject" and suggested that the Center for Research Libraries in Chicago be designated as the center.[19]

The Center for Research Libraries is a large, non-profit institution--a sort of libraries' library--with over 100 members and a collection of over 3 million items of primary research material available for loan to its members. With funding from the National Science Foundation, it has developed a Journal Access Service which guarantees to provide access to any periodical title that a member library has been forced to cancel. Copyright restrictions are avoided simply by lending the journals rather than copying them. Some libraries have made very effective use of the service and save substantial sums of money; what is surprising is that many of the Center's members, despite the size of the membership fees they pay and the pressure on their budgets, have elected to retain most of their serial subscriptions, even subscriptions to titles which are little used. With the likelihood of further economic stringencies in the future, however, the use of this service is likely to grow, and it may evolve into the national periodicals center envisaged by ARL.

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[18] National Commission on Libraries and Information Science, Toward a National Program for Library and Information Services: Goals for Action, Washington, 1975, p. 67.

[19] "Progress Report, ARL/CRL Joint Committee on a National Periodicals Lending Library," Minutes of the Eighty-eighth Meeting, Association of Research Libraries, 1976, p. 100.

A further service offered by CRL is related. Members send requests for photocopies of recent journal articles in the sciences and social sciences to the Center, and for those it cannot fill the Center retransmits them automatically to the British Library Lending Division in Boston Spa, England. From there photocopies are sent via air mail directly to the requesting library. Through the use of standardized forms and procedures, as well as modern communications technology, the efficiency of the service is remarkable, despite the distances involved. The UC Santa Barbara library, which has made good use of it, reports that it can often secure photocopies from England through this service faster than from other California libraries!

For this as well as for several other reasons, the plan recommends that all UC libraries be members of the Center, and that membership be secured and budgeted on a systemwide basis. Other advantages to membership in the Center are discussed in Chapters VIII and X, since they concern acquisition policies and space problems. At present only UCLA and UC Santa Barbara are members, but the advantages of the systemwide membership would make the additional costs (approximately $82,000 per year) appear to be worthwhile.

At the national level, then, the plan recommends:

1) That the University begin a system of charges for interlibrary loans to institutions outside the state, in order to avoid further imbalance in its interlibrary lending activities and to encourage the development of a national system;

2) That the University join the Center for Research Libraries on a systemwide basis, in order to make available the resources of the Center to all faculty and students of the University, to participate in the various programs of the Center which enhance the availability of specialized research materials, and to encourage

its development as a national periodicals lending center.

International. Material likely to be of scholarly interest to a student or faculty member of the University should be obtainable, either in the original form, in microform, or in photocopy. If not available within the United States, the material must of course be obtained from international sources, and the time involved is likely to be at least one month or more. As noted in Chapter IV, however, some materials are not needed sooner, and the University's system can thus contemplate obtaining some materials from abroad, and still meet its performance goals.

At present, only Great Britain's library system is capable of responding with the efficiency that most scholars would desire. As the British Library modestly notes, it has "developed an inter-library lending service, based on the National Central Library and the National Lending Library for Science and Technology now combined in the Lending Division of the British Library, superior to that in any other country."[20] The first year after the creation of the new Lending Division (BLLD), a total of 1,832,000 requests were received, and an astonishing 83 percent were filled from its holdings. A further 8 percent were filled through the BLLD from other libraries, for a combined success rate of 91 percent. The agency handles an estimated 75 percent of all interlibrary loan traffic in the entire United Kingdom, and over 160,000 requests from overseas. Many of these are undoubtedly from United States libraries, encouraged by the performance of the British Library's air mail services, as mentioned earlier. A recent survey "has shown that the service offered to foreign countries by the Division can compare favorably for speed with any national system that is not based on a central loan collection."[21]

There are at least three conclusions that can be drawn from these facts. One is that the Association of Research Libraries has good grounds for its insistence on the need for creation of a national lending library for the United States as opposed to a decentralized system. Secondly, that the University of California will continue and probably should increase its use of the British Library's service for delivery of materials not obtainable in this country. And lastly, that librarians in the University should encourage emulation of the British system by other countries, insofar as possible, through their membership and influence in international organizations such as the International Federation of Library Associations (IFLA).

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[20] The British Library, First Annual Report, 1973/74, p. 3.

[21] Ibid., p. 7.

On the international level, then, the plan recommends:

1) That advantage be taken of the British Library Lending Division's services, both directly and through the program administered by the Center for Research Libraries;

2) That whenever possible librarians from the University assist and encourage the development of improved access methods in other nations.

As noted in Chapter V, there is considerable activity and interest on the international level in networks, and it may be hoped that this will increasingly include interest in systems for physical access as well as bibliographic access to library materials. If so, it should be possible for most materials of scholarly interest to be made available for use by University faculty and students, often within a month or less, wherever they may be located.

CHAPTER VII

INFORMATION AND INSTRUCTIONAL SERVICES

In addition to library materials, users may also need information that they are unable to locate themselves, and they may need instruction in the use of libraries and library materials.

Reference and Information Services. The reference services offered by the University's libraries are broader and more varied than most users realize. In addition to answering questions on almost every conceivable subject, reference librarians provide assistance on research projects undertaken by faculty members and graduate students, explain the use of complex bibliographical tools, arrange computerized searches of many different data bases, conduct information searches using on-line terminals, and (as noted later in this chapter) offer both formal and informal instruction in the use of libraries. Some requests can be answered with simple, factual information, but others require research that may take hours or even days of investigation.

As noted in Chapter V, the library's first significant task, from the standpoint of the user, is to help him identify the materials he needs. For many types of materials, the bibliographic tools available for this task are complex or incomplete, and the user is unlikely to be successful in finding the material needed by himself. Librarians are therefore needed to assist users in interpreting such tools, and to insure that all possible sources of information are made known to the reader.

The advent of computerized services for searching machine-readable data bases has also added a new dimension to reference and information services. Many of the major abstracting and indexing services, such as Chemical Abstracts, Biological Abstracts and the Current Index to Journals in Education, are now in machine-readable form, and computerized searching of these data bases is provided at UC through the Computerized Information Services (CIS) unit, a Systemwide library activity located on the UCLA campus. CIS also negotiates contracts with commercial firms such as Lockheed and Systems Development Corporation for University use of their on-line data base services, which are becoming increasingly popular. The information provided by these commercial services includes citations from bibliographical tools such as Psychological Abstracts, Dissertation Abstracts, Historical Abstracts, the Science Citation Index, and its companion, the Social Sciences Citation Index. The National Library of Medicine also provides an on-line service, called MEDLINE, for searching citations in medical literature. And the New York Times offers on-line access to virtually all articles published in that newspaper since 1969, plus abstracts from over 60 additional newspapers and journals.

Reference librarians in the University's libraries make all of these services directly available to library users. The librarians receive requests, interview patrons to determine their information needs, suggest search strategies and appropriate data bases to be searched, formulate the actual searches, and then deliver the results, usually in the form of a printed bibliography. If necessary, a follow-up discussion between the patron and the librarian may be held to insure that the search results are responsive to the patron's needs.

These data base services have proved a boon to researchers, faculty and students alike, but they do of course require extensive training for the librarians and additional staff time. The CIS unit mentioned earlier provides most of the training, not only for UC librarians but for staff members from CSUC and other institutions as well; periodic seminars and training sessions are held in different parts of the state, and individualized training is also offered. For the campus libraries, however, the staff time required to provide the services has become a growing problem. The value of the services is unquestioned, and many researchers now depend on them routinely, but additional personnel have not been added to handle the workload. More staff will be needed if the libraries are to take full advantage of the potential for increased service which the new technology offers, and Chapter IX speaks to this need. More extensive use of collections not on the home campus, as discussed in Chapter IV, is also likely to require more reference staff, as is the growing demand from off-campus users for service.

Referral Services. The need for information affects other agencies that disseminate information as well as libraries, of course, and recently there has been a growing concern that too little has been done to link these agencies and their services together for the benefit of the citizenry. This realization has led to a new interest in, and emphasis on, the referral function of libraries, i.e., the linking of needs with services, wherever they may be located. The appropriate service may or may not be the library; one article on "information and referral service" (to use the current term) even suggests that "it may be necessary to phone an agency to make an appointment for a patron who is not able or comfortable in doing that for himself."[1] When the process leads to another agency, it may also be necessary to follow up to insure that the link was made and the problem resolved. "Some patrons quite literally need an interpreter to deal with agencies, because of language difficulties or because they do not communicate well on the telephone," and follow-up may be necessary simply "because they have been given the runaround by another agency (or think that they have)."[2]

University libraries have become increasingly aware of the importance of their role in this regard, both because of a realization that their unique resources and expertise may be of help, and also because of a more pragmatic realization that financial support depends on public awareness of the value of libraries.

The library at UC San Diego recently participated in a study in the San Diego region which indicated both the need for libraries to be involved in the referral process, and the fact that libraries are too often overlooked as sources of help. A report on the study (written by the Associate University Librarian at UC San Diego) indicated that

> even though libraries do occasionally refer questions to information agencies, their tendency is to try to bend questions so that they can be answered by printed materials even though other kinds of referrals would be more appropriate. Information agencies, on the other hand, seldom refer to

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[1] Robert Croneberger, Jr., and Carolyn Luck, "Defining Information and Referral Service," Library Journal, v. 100 (November 1, 1975), p. 1986.

[2] Ibid., p. 1987.

> libraries even when confronted with questions best answered by the types of resources that libraries possess.[3]

One question in the San Diego study was concerned with statistics on American Indians and "was designed to see if any of the information agencies would refer it to a library, since libraries in this region have especially strong holdings on American Indians," but "not one agency referred to a library."[4] The San Diego study concludes that there is an obvious "need to have a better perspective of the value of libraries as information agencies in their own right," and that "information agencies and libraries could benefit by working together and sharing resources."[5]

Instruction and Educational Services. If there is a need for better information and referral services, there is also a growing and important need for better instruction and education of students in the use of libraries. The study at Yale referred to in Chapter II found that "the level of library skills possessed by users, especially undergraduates, is not high;"[6] and Lubans' study at Colorado indicated that the students themselves agreed; only 31 percent of the undergraduates and 48 percent of the graduate students felt that they had sufficient training in finding information in the library. A full three-quarters of the undergraduates and 70 percent of the graduate students agreed that "whenever I do research for a paper in the library I get the feeling that there are information resources on my topic which I'm somehow missing."[7] And a "recent, major study of reference services" concluded that "undergraduates are confused by the library, and require considerable help in finding their way around in it; they are unfamiliar with card catalogs and require assistance with the simplest lookups; they have difficulty finding materials in the stacks; they know little about bibliographic resources. In other words, they are unfamiliar with the rudimentary mechanics of library use."[8]

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[3] John R. Haak, The Information and Referral System in the San Diego Region, University of California at San Diego, 1976, p. 3.

[4] Ibid., p. 9.

[5] Ibid., p. 7.

[6] Robert Balay and Christine Andrew, "Use of the Reference Service in a Large Academic Library," College & Research Libraries, v. 36, no. 1 (January 1975), p. 25.

[7] Calculated from data in John Lubans, Jr., Report to the Council on Library Resources on a Fellowship, p. 17.

The problem becomes serious as teaching methods change and place more emphasis on learning to learn, rather than on absorbing knowledge; as the report of the Carnegie Commission on Higher Education notes, "the teaching of existing knowledge becomes comparatively less essential to the task of higher education, and the imparting of skills for continuing self-education comparatively more, particularly in independent study and through the library."[9]

There are various ways in which instruction in using library materials can be given, and most of these ways have been used for some time in the University of California libraries. At the simplest level, there is the familiar "orientation" technique, or guided tour, the main purpose of which is to familiarize students with the layout of the library building and the location of various resources and services. At a more specific level, there are also "point-of-use" instructions, including printed guides on basic techniques in using the resources of the library; brochures on how to use bibliographic tools, such as indexing and abstracting services; video-tape, audio tape and slide-tape presentations; and personal guidance by reference librarians in methods of pursuing research in particular fields.

In the last few years, a third type of instruction has also gained increasing support in academic libraries throughout this country and abroad, particularly in Great Britain. This method is the formal course in bibliographic and research methods, offered for academic credit, and particularly designed for undergraduate students. The major objective of such classes is to impart skills for continuing self-education on the part of the student, and they also "serve to bring the library into the role of a more active participant in the instructional process."[10] The success of this method and the enthusiasm with which the classes have been received appear to result from two sources: first, classes "provide an effective way for covering a lot of material for a lot of students" who cannot be reached as well otherwise, and secondly, the classroom format is a familiar one to students: "classes are, after all, the principal effort of most academic institutions, students are accustomed to learning in this way, and courses provide a structure and sequence for the learning activity that differs materially"[11] from the orientation and point-of-use instruction methods mentioned earlier.

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[8] Quoted in Allan J. Dyson, "Organizing Undergraduate Library Instruction: The English and American Experience," Journal of Academic Librarianship, v. 1, no. 1 (March 1975), p. 11.

[9] Carnegie Commission on Higher Education, Reform on Campus, McGraw-Hill, 1972, pp. 23-24.

The University of California libraries have been particularly aware of, and concerned about, the need for such instruction, and within the last few years formal courses have been established in one form or another on almost every campus. As of 1977, the situation, by campus, is as follows:

Berkeley. Bibliography I, a course sponsored by the UC Berkeley School of Library and Information Studies, is the largest and oldest program in the system. Pre-enrollment for the fall of 1976 numbered almost 900 students, of whom approximately 369 were accommodated in 16 sections.

Davis. A three-unit course entitled "Introduction to Library Research and Bibliography," developed by the library staff and sponsored by the English Department, is taught by four librarians in two sections. In addition, a course entitled "Biomedical Information Retrieval" has been offered since 1967 by the Health Sciences Library staff.

Irvine. A two-unit course called "Biblio-strategy," developed and taught by librarians and sponsored by the Humanities Department, is in its third quarter.

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[10] This is also a recommendation of the Carnegie Commission on Higher Education, as pointed out in the Final Report of the LAUC Committee on Library and Bibliographic Instruction, from which the quotation is taken (p. 4).

[11] Final Report of the LAUC Committee, p. 2.

Los Angeles. A new four-unit course entitled "Information Resources and Libraries" is sponsored by the Graduate School of Library and Information Science, and was developed jointly by the Library and the School.

Riverside. The Riverside libraries provide lectures on request from the faculty in various subject fields, and these requests have mushroomed in recent years. One librarian also teaches a four-unit course for the Music Department.

San Diego. A two-unit course in an interdisciplinary sequence called "Contemporary Issues" is taught by librarians, and has been very successful.

San Francisco. A librarian teaches a two-unit course for the Department of the History of Health Sciences called "Introduction to the History and Bibliography of the Health Sciences."

Santa Barbara. A two-unit course in the Interdisciplinary Studies Program is taught by librarians, and other librarians give subject bibliography courses in such fields as chemistry, music, and political science.

Santa Cruz. The library is offering a new series of seminars, but they are not given for credit, since all courses at Santa Cruz are five-unit courses and the library has been unable to provide instructors for the amount of time a five-unit course would require.

Although the courses mentioned are very popular with the students who take them, their creation has not been without administrative problems. In the first place, only Berkeley and Los Angeles have library schools, so for the other seven campuses there has been the often difficult task of finding an academic home for the courses. On some campuses, particular departments have been sensitive to the need, and accommodated it by designating librarians as "lecturers" or "associates" in those departments; on other campuses, providing such arrangements has been difficult. Although librarians teach as a part of their regular duties in many universities throughout the country, University of California librarians are not members of the Academic Senate and hence cannot be given normal teaching status or titles; on some campuses, in fact, they are not allowed even to assign grades to the work of the students they teach. Various devices have been used to avoid these problems, but there are no consistent universitywide policies on the matter.

A related problem is budgetary. The Berkeley and UCLA library schools reimburse the libraries on those campuses for the time of the instructors, but on other campuses the instructors serve without stipend, and the library receives no reimbursement for their time. This means that the libraries must absorb the staff costs, services in other areas must suffer, and those librarians who volunteer to teach courses must often continue to carry full-time regular library assignments as well. This matter is discussed further in the recommendations that follow.

As with other elements of library service, the response of the library system to user needs must be given on multiple levels, depending on the nature of the need. In the area of informational and instructional services, the plan makes the following recommendations:

Department and Branch. Those branch libraries with professional librarians will of course continue to offer reference and research assistance at that level. Librarians who have visited departmental offices, often for unrelated reasons, report a high level of interest in further service, both informational and instructional, and subject-oriented librarians, either in existing branches or in the main library on each campus, are particularly well-qualified to meet this need. The offering of additional courses in subject bibliography and research methods at the departmental level should, therefore, be encouraged.

Campus. The library instruction courses now being offered on most campuses are clearly needed and just as clearly wanted and successful. In recognition of this, allowance should be made for such services in the budgets of each campus library system, so that there is no disincentive to provide such courses. Funds for additional positions to provide library instruction are, therefore, included in the staffing projections recommended in Chapter IX. To the extent that academic arrangements are deterring the offering of library courses, the problem should be a matter of joint concern and negotiation for the Academic Senate and its Library Committees, and the librarians, working both through the Librarians Association and the administration of campus libraries. Much more effective use of campus collections should result, and this consequence should provide an adequate incentive toward resolution of the problems.

Region. Librarians are, and must be, more aware of their responsibilities for meeting the information and referral needs of library users, and must recognize that the sources of help may extend beyond their libraries. Cooperative arrangements within regions will therefore be necessary. Existing ones should be supported and new ones made where needed.

Within the University, the Berkeley and UCLA libraries have acted as regional centers for providing the libraries in the North and the South with computerized information services through the New York Times on-line service mentioned earlier. Within geographic regions of the state, the UC libraries also participate in numerous cooperative arrangements to make information more accessible. For example:

. Reference librarians at UC Davis and CSU Sacramento share the Davis Automated Information Retrieval Service (AIRS), and in addition Davis provides traditional reference service to the Mountain Valley, North Bay and North State cooperative systems.

. Riverside is the principal reference sourse for SIRCULS (San Bernardino, Inyo and Riverside Counties United Library Services).

. Santa Barbara and San Diego offer comparable reference services to networks in their region: the TIE (Total Interlibrary Exchange) and the Serra/METRO system.

. Berkeley has an agreement with the East Bay Information Service (EBIS) to provide on-line data base services, and a contract is being negotiated with the Bay Area Reference Center (BARC) to provide reference services to public libraries in Northern California.

. UCLA provides reference service in the Los Angeles region through the Southern California Answering Network (SCAN), and Irvine does the same for Orange County through LOCNET (the Libraries of Orange County Network).

At present, the costs of these services are absorbed by the libraries, which means that to the extent they are offered other services must suffer. To prevent this from becoming a deterrent to providing the services, allowance should be made for them in the budget, and the staffing projections in Chapter IX do so.

The San Diego study indicates the need for librarians to be aware of other information agencies in their regions, and to refer users to them whenever appropriate. For this purpose Haak's recommendation for "a directory of information agencies and libraries that would state the name of each service clearly, its purpose, its hours of service, types of services provided, and its special emphasis in terms of the types of subjects that it can handle"[12] should be implemented in each geographic region of the state, and UC libraries might well take the lead in this endeavor.

Systemwide. As noted in the earlier planning report entitled The University of California Libraries: Problems and Prospects, a procedure is needed for coordination of reference services throughout the system. In order to insure that, insofar as possible, no reference question goes unanswered, responsibility for authoritative information service in specific subject fields should be assigned to particular libraries or librarians, and other libraries or librarians should forward reference questions which are beyond their competence to these bibliothecal "courts of last resort."

As a first step in this direction, a new edition of the UC Reference Directory should be published, listing the subject expertise of libraries and librarians in the UC library system to facilitate referrals to specialists.[13] To keep such information on a current basis, a coordinator should also be appointed to maintain up-to-date files on the special expertise of existing staff members, and to ascertain the subject and language specialties of new staff members joining the system. Where a particular subject is not covered, staff members with minimal training in the area should be encouraged to expand their knowledge of the subject, and financial support should be given for the necessary course work or training.

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[12] Haak, p. 6.

[13] This recommendation and several related ones are contained in the report of the LAUC Committee on Reference and Advisory Services, June 28, 1976.

State. To help keep all librarians abreast of current information on effective methods of library instruction, a California Clearinghouse on Library Instruction has been formed by librarians from academic, public, school and special libraries. UC Davis and UCLA currently receive and make available printed materials developed by California librarians for library instruction, and plan to continue this service.

National and International. To some extent, even with systemwide coordination, there will always be information needs which can be satisfied only by referring users to national and international sources. In the sciences, for example, UC libraries occasionally refer users to the National Referral Center for Science and Technology at the Library of Congress, which then identifies the most likely source of information, whether personal or institutional. When information services are better coordinated within the UC system, however, the need for referral outside the State will be more easily identified and accomplished.

Summary. In summary, the plan recommends:

1) That existing reference and information services be continued, with augmentation of the staff to provide computerized data base services, to facilitate use of collections not on the home campus, and to meet the growing demands for service to non-University users;

2) That the offering of additional courses in subject bibliography and research methodology at the departmental level be encouraged;

3) That allowance for teaching of library instruction courses be made in the staffing portion of campus library budgets;

4) That similar allowance be made for the cost of reference services provided to users who are not UC students and faculty, but who are served through regional library cooperatives within the State;

5) That regional directories of information agencies be compiled, and that UC libraries provide leadership in this endeavor; and

6) That reference service throughout the UC system be coordinated in such a way that reference questions beyond the scope of one library can be referred to the UC library or librarian with assigned responsibility and expertise in the field.

Library use and bibliographical research are complex, because knowledge and the library materials which contain knowledge are complex. To insure that the best use is made of the University's library collections, additional staffing in the public service area will be required, and this additional staffing will add to library costs. In economic terms, however, expenditures on such additional staff will maximize the intellectual return on the investment made by the State in these collections, and the benefits will far outweigh the costs.

CHAPTER VIII

ACQUISITION AND PROCESSING OF MATERIALS

Chapter III discussed the traditional approach to meeting the needs of users for information, and pointed out that the heavy emphasis on acquisitions has become both unrealistic and undesirable. Continued growth of collections at an annual compounded rate of over 10 percent, as during the 1960's, is no longer financially feasible, and the consequences of such growth rates--the increased difficulties in processing the materials and actually making them available to users, when and where needed--have prevented any demonstrable increase in the usefulness of the collections.

As pointed out in Chapter IV, however, some materials must continue to be acquired if the principal objective--provision of needed material within the needed time span--is to be met. At each of the levels defined earlier, adequate acquisition rates must therefore be maintained, or the performance of the entire system is endangered.

At present, the funds available for purchase of library materials are approximately 14 percent below what is needed to maintain an adequate response at each of these levels; for the total system, funds for purchase of approximately 609,000 volumes per year are needed, whereas the current budget allows for only 523,000 volumes. The plan calls for increases in the acquisition portion of the library budget to the 609,000-volume level by 1978/79, after which, assuming no major increases in enrollment or programs, it is anticipated that the acquisition level can be held relatively constant because of improved methods for sharing resources throughout the system.

The derivation of these figures is given later in the chapter, but the need for an increase in the level of acquisitions should first be explained. There are several contributing factors:

Decline in Purchasing Power and Actual Volumes Added. As noted in Chapter III, the increased costs of library materials over the past decade have far exceeded the general rate of inflation, and the result has been a steady erosion of purchasing power for the University's libraries. This is seen most clearly in Table 10 of Chapter III (page 41), which shows a steady growth in volumes added (including those added by gift and exchange) until 1969/70, and then a fairly precipitous decline, with the result that the University is now acquiring only about as many volumes per year as in 1963/64.

Growth in User Population. At the same time that the figure for actual volumes added has been regressing to the 1963/64 level, the number of faculty, students and other users to be served has been steadily increasing. In 1963/64, there were 69,860 students, and in 1975/76 there were 123,929, an increase of over 77 percent. In 1963/64, there were 9,949 full-time-equivalent faculty and other academic personnel, and in 1974/75 there were 17,904, an increase of just under 80 percent. The combined effect of the decline in the volumes-added rate and the increase in user population is illustrated in Figure 2. Attempting to serve a larger and larger population with fewer and fewer current materials has meant a deterioration in library service at all levels which must be reversed.

Growth in Published Information. At the same time that these two trends have been operating, the volume of annually published information has continued to expand. In the decade from 1964 to 1973, world book production rose from an estimated 408,000 titles to 580,000 titles, an increase of over 42 percent.[1] American book trade production during the same period rose from 28,451 titles to 39,951 titles, an increase of over 40 percent.[2] The declining acquisition rate at the University of California libraries has therefore meant that its students and faculty have had available, for study and research, a steadily decreasing percentage of recorded knowledge.

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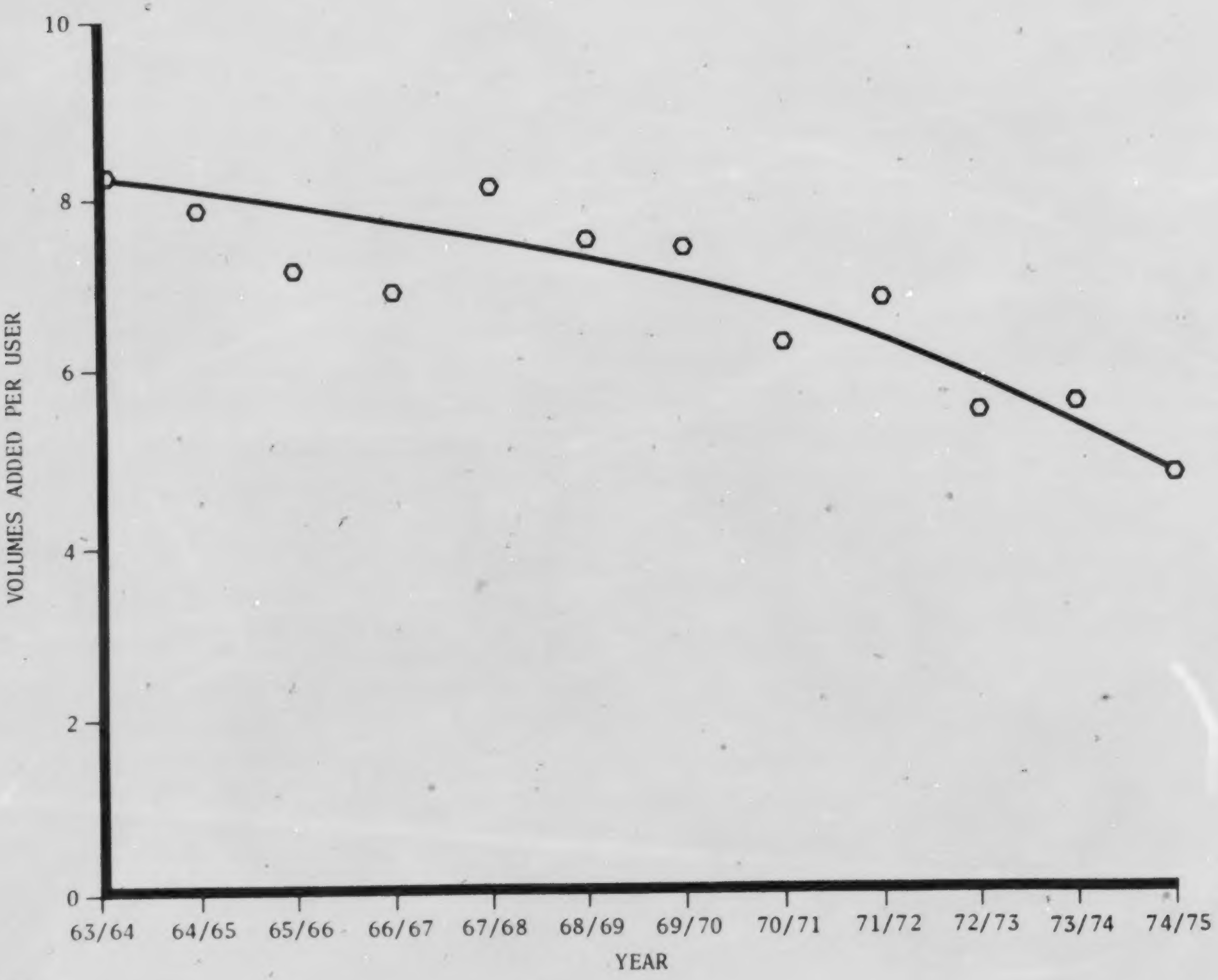
[1] Source: UNESCO Statistical Yearbook, 1974/75.

[2] Source: Bowker Annual of Library and Book Trade Information.

Figure 2

Volumes Added Per User



Reductions in Serial Titles Received. The increases in library costs and the reduced purchasing levels have hit hardest at the University's holdings in journal titles and other serial publications. In 1975/76 alone, over 7,000 serial subscriptions were discontinued systemwide. On many campuses, these cancellations were necessary to allow subscriptions to important new serials, but on some campuses there has been a steady net decrease in the number of serials received. At Berkeley, for example, there was a net decrease of 2,300 titles in 1973/74, another 2,916 titles in 1974/75, and another 1,204 in 1975/76. The Berkeley library has long been renowned as having the strongest serial collection in the country, but this reputation is now seriously jeopardized.

In the University library system proposed by the plan, sharing of serial titles systemwide will be greatly facilitated, but the material obviously must be there in order for it to be shared.

Need for Replacement of Materials. As materials age, particularly the most important materials which are heavily used, their condition naturally declines and at some point it becomes necessary to replace them. Other important materials are lost, either through theft or because users misshelve them; whatever the reason, their availability is lost to the user who needs them. At present acquisition levels, there are insufficient funds to replace all of those materials which should be. UCLA, for example, has been unable to replace worn out sets of such basic reference works as the Book Review Digest and the Reader's Guide to Periodical Literature.

Need for Retrospective Materials. Particularly on the younger campuses, there is also a great need for basic materials that declining purchasing power has left them unable to acquire, and even on the large campuses there are unmet needs for important retrospective works.

These indicators all point to the need for higher levels of acquisitions, but they do not, of course, provide a method for determining what the total acquisition rate should be, nor how the acquisition funds should be allocated amongst the campuses and individual disciplines. For this, we must return to the fundamental assumptions stated earlier: that the function of the library is to provide its users with access to information, and that library planning must be based on analyses of the nature of users, information, and access methods.

Access measures are discussed in other chapters, but the nature of the clientele to be served and the nature of information are both important to the derivation of methods for determining what the acquisition rate should be. At the University of California, as at other academic institutions, users vary both in number (as reflected by enrollment figures) and in the nature and intensity of their use of the library. The information needed also varies, as discussed earlier, not only by intensity of use and by such factors as age and language, but by subject.

A fundamental assumption, also discussed earlier, is that library planning must be related to academic planning, and this point has been consistently emphasized in the University's planning in the past. The Report of the Library Policy Task Force issued in April 1974, for example, has as one of its principal "bases for library planning" that "the University library collection should be developed and maintained in close relation to the University and campus academic plans." It further recommends that "decisions about the acquisition of library materials should be made on the basis of the programmatic need for the materials."[3]

An acquisition rate based on academic programs can reflect the difference in library use between programs in different subject areas, but it ignores the variations in the number of users from campus to campus. Another University committee, however, the Ad Hoc Committee on Library Acquisitions Policy, began in 1973 the development of a model which would take into account both of these factors (programs and enrollments), plus one other factor: extramurally funded research, which creates extra demands on libraries in addition to the other factors mentioned.

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[3] Report of the Library Policy Task Force, University of California Library Policy to 1980-81, 1974, p. 2.

The committee used as the basis for its recommendations a model developed by Melvin J. Voigt, a model later published (with some modifications) in the literature.[4] The approach has received wide support in the profession, and is currently in use or under consideration at a number of other institutions, notably the State University of New York. The original Voigt model was further modified by University committees to meet specialized situations, as Voigt had suggested would be necessary,[5] and in the version here proposed represents the best estimate possible of current acquisition needs, using presently available data. The results of applying the model are shown in Table 15 and each element is explained below.

1. Base Level. A base rate of 40,000 volumes per year is established for any library serving a university defined (for the purposes of the model) as offering the doctorate in English and at least two other major European literatures; in at least three social sciences; in the major sciences (chemistry, physics, biology and mathematics); in history; in psychology; and in philosophy. The base is intended to cover all undergraduate and master's degree programs, and most doctoral programs, except for those in professional fields, as noted below. Specific numbers of volumes are not identified for each undergraduate major, master's program, and doctoral program because it is felt that such an attempt "leads to a morass of meaningless numbers, due primarily to the great amount of overlap between fields, the extensive use of materials in several fields by students and scholars in other fields, and the variations in breadth and depth which programs with the same or comparable titles will have in various universities."[6] The base is also intended to include general materials not identified with a particular discipline.

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[4] Melvin J. Voigt, "Acquisition Rates in University Libraries," College and Research Libraries, v. 36, no. 4 (July 1975), pp. 263-271.

[5] Ibid., p. 265.

[6] Ibid., p. 266.

Table 15

UNIVERSITY OF CALIFORNIA

Model for Current Acquisitions

		Berkeley	Davis	Irvine	Los Angeles	Riverside	San Diego	San Francisco	Santa Barbara	Santa Cruz	Total University
1.	Base	40,000	40,000	40,000	40,000	40,000	40,000	--	40,000	40,000	320,000
2.	Additions per Field										
	Foreign Literatures	12,000	2,000	2,000	13,000	2,000	2,000	--	2,000	2,000	37,000
	Social Sciences	16,000	4,000	--	11,000	4,000	2,000	--	2,000	--	39,000
	Earth Sciences	2,000	2,000	--	2,000	2,000	2,000	--	2,000	2,000	14,000
	Astronomy	2,000	--	--	2,000	--	--	--	--	2,000	6,000
3.	Advanced Graduate Professional										
	Agriculture	2,000	5,000	--	--	3,000	--	--	--	--	10,000
	Architecture	1,000	--	--	--	--	--	--	--	--	1,000
	Art	3,000	--	--	3,000	--	--	--	3,000	--	9,000
	Business Administration	2,000	--	2,000	2,000	--	--	--	--	--	6,000
	City and Regional Planning	2,000	--	--	2,000	--	--	--	--	--	4,000
	Drama	2,000	2,000	--	2,000	--	--	--	2,000	--	8,000
	Education	3,000	--	--	3,000	3,000	--	--	3,000	--	12,000
	Engineering	3,000	3,000	1,000	3,000	--	3,000	--	3,000	--	16,000
	Law	8,000	8,000	--	8,000	--	--	--	--	--	24,000
	Library Science	1,000	--	--	1,000	--	--	--	--	--	2,000
	Medicine	--	8,000	8,000	8,000	--	8,000	8,000	--	--	40,000
	Med-Related Professions	2,000	--	--	2,000	--	--	4,000	1,000	--	9,000
	Music	3,000	--	--	3,000	--	3,000	--	3,000	--	12,000
	Oceanography	--	--	--	--	--	3,000	--	--	--	3,000
	Religious Studies	--	--	--	--	--	--	--	2,000	--	2,000
	Social Welfare	1,000	--	--	1,000	--	--	--	--	--	2,000
	Veterinary Science	--	2,000	--	--	--	--	--	--	--	2,000
4.	Undergraduate Supplement	8,000	4,000	2,000	8,000	-1,000	2,000	-2,000	4,000	2,000	27,000
5.	Graduate Supplement	3,000	--	--	6,000	--	--	--	--	--	9,000
6.	Sponsored Research Supplement	5,000	2,000	1,000	5,000	--	5,000	4,000	--	--	22,000
	Total Budgeted Acquisitions	121,000	82,000	56,000	125,000	53,000	70,000	14,000	67,000	48,000	636,000
7.	Less 20% of Nonbudgeted Volumes	-10,800	-3,500	-1,100	-5,000	-1,100	-1,900	-100	-2,300	-900	-26,700
	Net Total (Budgeted)	110,200	78,500	54,900	120,000	51,900	68,100	13,900	64,700	47,100	609,300
	Model (Rounded)	110,000	78,000	55,000	120,000	52,000	68,000	14,000	65,000	47,000	609,000

2. Additions for Certain Fields. For doctoral programs with a high degree of independence in their literature, additional allocations are made. These fields include foreign literatures, social sciences beyond the three required for the base level, and certain physical sciences (earth sciences and astronomy). For each of these fields, an allotment of 2,000 volumes per year is made.

For fields with programs that represent a substantial overlap with additional fields, such as area studies or combined literature and history programs, the allotment is made either in the literature category or the social science category, but not both. For example, at UC Berkeley the Asian Studies program and the Oriental Languages program receive 2,000 volumes for the pair, not 4,000; similarly, the Islamic Studies program and the Near Eastern Languages program at UCLA receive a combined allocation of 2,000 volumes.

For fields without a considerable literature apart from that of other disciplines--that is, fields that depend primarily on the literature of other fields provided for elsewhere in the model--no additional volumes are allotted.[7]

3. Additions for Graduate Professional Programs. As in the second factor, allowance is made for certain professional programs with a high degree of independence in their literature that are not covered elsewhere. For three fields, the allowance is varied depending on the extent of the programs:

Agriculture	1,000-5,000
Engineering	1,000-3,000
Medicine-related Professions	1,000-4,000

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[7] Specific examples of fields in which advanced graduate degrees are offered but for which no additional volumes are added are agricultural economics, anatomy, atmospheric science, biochemistry, biomedical engineering, biophysics, botany, classical archeology, comparative literature, comparative pathology, comparative pharmacology, demography, ecology, endocrinology, engineering physics, entomology, genetics, geochemistry, information science, logic, meteorology, microbiology, neurosciences, nutrition, physiology, plant physiology, public policy, romance philology, soil science, speech, statistics, wildlife resources, and zoology.

For other professional fields, the allowances are as follows:

Architecture	1,000
Art	3,000
Business Administration	2,000
City and Regional Planning	2,000
Drama	2,000
Education	3,000
Law	8,000
Library Science	1,000
Medicine	8,000
Music	3,000
Oceanography	3,000
Religious Studies	2,000
Social Welfare	1,000
Veterinary Science	2,000

Because basic science materials are provided for in the base (factor 1), it is assumed that the additions for agriculture, engineering, medicine, oceanography, veterinary science and medicine-related professions need not be as high as would otherwise be necessary. Similarly, it is assumed that social science materials already provided for elsewhere in the model will help support business administration, education, and law, and that materials in the humanities provided for in the base will help support art, drama, and music.

4. Undergraduate Adjustment. University campuses with large numbers of undergraduate students require substantial funds for purchase of duplicate copies; similarly, campuses with particularly small numbers of undergraduates require fewer duplicates and less extensive collections of general material. An adjustment is therefore made for enrollments substantially over or under 5,000 students. For each 2,000 students or fraction thereof over 5,000 an addition of 1,000 volumes is made, and for each 2,000 students or fraction thereof under 5,000 a subtraction of 1,000 volumes is made.

5. Graduate Supplement. For campuses with large graduate

student enrollments, the graduate programs themselves are likely to be more complex, typically covering a number of subspecialties. To provide for this factor, an allowance of 1,000 volumes is made for every 1,000 graduate students over 5,000.

6. Sponsored Research Supplement. Extramurally funded research creates extra demands on libraries in proportion to the number of additional users added--that is, the number of appointees paid from restricted funds. For each $5 million in annual salaries paid from such funds for organized research (not including major AEC laboratories or Systemwide Administration) an addition of 1,000 volumes is made.

7. Non-Budgeted Acquisitions. Each campus receives material for its collections from gifts, from exchange agreements, and from federally-funded programs, although the number of volumes received varies widely from campus to campus. At least some of these must obviously be deducted from the total required, but because these materials are not selected with regard to particular academic programs, and hence tend to be much less useful than purchased materials, the reduction is placed at 20 percent.

Table 15 indicates the total number of volumes required by the University, broken down by campus. However, the University has determined that some of the funds budgeted for library materials should be used for purchases that serve regional or systemwide needs, specifically materials needed only in one copy or in two copies (one in the North and one in the South). It is expected that most of these materials will be large sets which can be easily shared on a regional or systemwide basis. In 1976/77, one percent of the total available for purchase of library materials was set aside for this purpose, and this percentage will be gradually increased to five percent.

Table 16 indicates the growth of collections held at each campus as a result of applying the formula in Table 15.

As pointed out in other chapters, the library system must be able to respond to user needs within an appropriate time span at each of several levels. This is true in acquisitions as in other

Table 16

Projected Size of Collections, University of California Libraries (In Thousands) (Includes Non-Budgeted Volumes)

Year	Berkeley	Davis	Irvine	Los Angeles	Riverside	San Diego	San Francisco	Santa Barbara	Santa Cruz	Total
1976/77	4,774	1,392	768	3,960	880	1,235	435	1,249	550	15,243
1977/78	4,938	1,468	818	4,094	919	1,301	449	1,309	589	15,885
1978/79	5,115	1,544	869	4,236	962	1,366	467	1,367	634	16,560
1979/80	5,300	1,624	923	4,385	1,006	1,435	487	1,429	681	17,270
1980/81	5,484	1,705	978	4,533	1,051	1,502	505	1,489	728	17,975
1981/82	5,667	1,786	1,032	4,682	1,096	1,570	524	1,550	773	18,680
1982/83	5,852	1,866	1,086	4,870	1,141	1,639	544	1,610	820	19,388
1983/84	6,036	1,947	1,140	4,979	1,186	1,707	562	1,671	867	20,095
1984/85	6,220	2,028	1,194	5,128	1,231	1,774	582	1,732	914	20,803
1985/86	6,404	2,108	1,248	5,275	1,276	1,843	601	1,793	960	21,508
1986/87	6,588	2,189	1,301	5,424	1,320	1,911	619	1,854	1,007	22,213
1987/88	6,772	2,269	1,355	5,572	1,364	1,979	639	1,914	1,054	22,920

areas of library activity, and several particular concerns are noted below as they pertain to specific levels.

Branch. Projections of the growth of individual branch libraries are not given, because many will remain at a relatively constant size, transferring materials less frequently needed to the main campus collection, or to a regional facility. However, if the system is to meet its performance objectives at this level--that is, to provide access to materials needed immediately--a significant portion of the book funds must be spent for branch library collections. An indication of the need is given by statistics kept on the Berkeley campus in connection with the processing of materials. Over a two-year period, 25 percent of the book purchase orders processed were accompanied by a request that the material be forwarded immediately to the ordering unit without cataloging; in other words, the material was needed immediately, and even the delay imposed by the cataloging process was unacceptable.

It is also clear that some of the need for materials in branch libraries cannot be met at current acquisition levels. This becomes an especially serious problem when the branch library is physically remote from related collections. A letter from the Chairman of the Division of Mental Health in the Sacramento Medical Center to the UC Davis Health Sciences Librarian, quoted in part below, provides a specific and poignant example:

> Your memo highlights one of the major problems of a split campus between the basic sciences and the clinical sciences. The lack of adequate library facilities at Sacramento has been a major disadvantage to education programs for medical students and for house officers. In our own field, we have, in any given time, 30 psychiatric residents, 4 child psychiatry fellows, 6 clinical psychology interns, 12 medical students, 25 social work and nursing students, and somewhere between 75 and 90 students on other electives. The collection in the mental health sciences at Davis is magnificent. The collection at Sacramento is pitifully small. We have tried to make up for this with a tiny Departmental library (assembled at our own expense), the psychoanalytic index (generously funded by you) and by the psychiatry collection in the health sciences library here.... Although we cannot hope to duplicate the total Davis campus health sciences collection here at Sacramento, a large part of it simply must be available if the students and clinicians are not to be seriously deprived in this regard. Nothing is

> more important to an educational enterprise than a student, a teacher, a patient, and an effective library. We certainly lack the library. I hope that you will do everything in your power to improve this situation.[8]

Campus. The report of the library Policy Task Force specified that "each campus should have a collection which, *in conjunction with the other elements of the University library system*, is fully adequate to support the programs of instruction and research approved for the campus."[9] The extent to which this goal is met by collections housed locally, as opposed to material supplied "in conjunction with the other elements of the University library system," is defined in this plan as all materials needed within 24 hours. To some extent, whether a particular item is likely to be needed within this time frame can be predicted in advance. Fussler and Simon, for example, have shown that past circulation is a reliable indicator of future demand, and that where there is no record of past use, "rules that take into account both language and publication or accession date are most efficient."[10] For works not yet purchased, Weeks has indicated that language (and to some extent, publisher) may also be reliable predictors.[11] Advance prediction of the demand for particular items is necessarily a matter of professional judgment (and some guesswork), but Buckland has pointed out that "the penalty for individual erroneous predictions is quite small."[12] If despite the predicted low usage a particular book turns out to be in high demand, it can readily be moved to a more accessible location, and vice versa. The automated circulation systems mentioned earlier will facilitate monitoring of actual use and correction of erroneous predictions.

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[8] Letter from Donald G. Langsley, M.D. to Dr. Merjan Merala, June 13, 1974.

[9] *Report of the Library Policy Task Force, University of California Library Policy to 1980-81*, p. 2. Italics supplied.

[10] Herman H. Fussler and Julian L. Simon, *Patterns in the Use of Books in Large Research Libraries*, University of Chicago Press, 1969, p. 143.

[11] Ken Weeks, *Determination of Pre-Acquisition Predictors of Book Use*, University of California, Institute of Library Research, 1973, p. 19.

[12] Michael K. Buckland, *Book Availability and the Library User*, Pergamon Press, 1975, p. 105.

A number of writers have noted that a relatively small proportion of any library's collection is in such heavy demand that these books are often unavailable when the student or faculty member needs them,[13] and if the system is to respond effectively, multiple copies of these books must be purchased at the campus level in order to meet the demand. If this is not done, the goal of 24-hour response cannot be met, even though the titles involved may in fact be held at the campus level. Buckland, Gore, and others have shown that if duplication of the materials most in demand is pursued at even a modest level, the increase in the user "satisfaction rate" or the library's "performance rate" can be dramatic.[14] Other writers have shown that it is possible to predict the number of multiple copies needed, using computers and statistical techniques.[15] The automated circulation systems mentioned earlier will provide much of the needed information, and if this strategy is pursued aggressively it should be possible to meet predicted needs at the campus level within the specified time.

Region and Systemwide. All materials needed within two days should be available within one of the two proposed regions, and all materials likely to be needed within one week should be available within the system. As indicated earlier, the immediacy of need and the likelihood of need may be predictable by several factors, one of which is language, and it is likely that much of the material to be acquired on a regional or systemwide basis will be materials in the less common languages. Even in the largest libraries, as De Gennaro points out, "they are not heavily used and could be shared to a much greater extent than they are now."[16]

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[13] See, for example, Buckland, p. 56; Daniel Gore, "The View from the Tower of Babel," Library Journal, v. 100 (September 15, 1975), p. 1061; and Gordon Williams et al., Library Cost Models: Owning Versus Borrowing Serial Publications, Office of Science Information Service, 1968, p. 4.

[14] For a recent analysis, see Daniel Gore, "Let Them Eat Cake While Reading Catalog Cards: An Essay on the Availability Problem," Library Journal, v. 100 (January 15, 1975), p. 97 ff.

[15] See Robert S. Gran, "Predicting the Need for Multiple Copies of Books," Journal of Library Automation, v. 4, no. 1 (March 1971), pp. 64-71, and W. Y. Arms, "A Simulation Model for Purchasing Duplicate Copies in a Library," Journal of Library Automation, v. 7, no. 2 (June 1974), pp. 73-82.

A University committee charged with recommending guidelines for the acquisition of materials on a regional and systemwide basis has also recommended several other kinds of materials which should be considered in this category, including newspapers on microfilm and subscriptions to serials which are needed in only one copy throughout the system.

Under the procedures adopted for acquisition of such materials, each campus makes recommendations for items to be purchased with the funds available, and a group composed of the chief collection development officers on each campus reviews the recommendations.

> Items for which there is substantial agreement as to purchase and location among members of this group will be approved for purchase, with the Executive Director reserving the right to veto items whose purchase would not be consistent with the University of California libraries policies. Decisions on items for which substantial agreement cannot be reached will be referred to the Executive Director or his designee.[17]

Further experience with this procedure during 1977/78 will indicate whether revision of the methodology is needed.

It should be noted that not all material acquired on a regional or systemwide basis will necessarily be stored in a regional facility. In most cases, in fact, it is expected that the material will be housed in an existing campus library, with that campus assuming responsibility for making the material available regionally or systemwide on an expeditious basis.

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[16] Richard De Gennaro, "Austerity, Technology and Resource Sharing: Research Libraries Face the Future," Library Journal, v. 100 (May 15, 1975), p. 919.

[17] Collection Development Committee, Guidelines for University of California Library Acquisitions with Shared Purchase Funds, August, 1976, p. 3.

National and International. Most of the UC libraries receive materials from other institutions around the world on exchange. In addition, both UC Berkeley and UCLA receive substantial amounts of foreign publications as a result of a cooperative acquisitions program sponsored by the Library of Congress. These materials and others purchased with State and local funds must continue to be acquired because of the University's responsibilities as a part of the national library network, and to maintain its pre-eminence as a research institution. At this level, however, only a fraction of the available material can, or needs to be, acquired, and the University libraries must rely on other institutions for the rest, just as those institutions rely to some extent on the University.

This system of shared responsibility, combined with appropriate access measures, should provide those materials not available within the University itself within the two-to-four week goal.

At all levels--departmental through international--the important step is to differentiate acquisition decisions on the basis of the predicted or predictable immediacy of demand and level of use. With the help of computerized statistical monitoring, refinement of procedures over a period of time, and (most importantly of all) the judgment of experienced professional librarians, this should be possible within the range of accuracy necessary to enable the system to meet its performance goals.

Processing of Materials. Once material is acquired, it must be processed--recorded, cataloged, bound if necessary, and otherwise made ready for use. Unfortunately, these activities are labor-intensive, and as the salaries of library staff have risen in the last decade or two the costs of these activities have risen with them. Baumol and Marcus have calculated that library operating costs rose between 4 and 5 percent, compounded, during the period from 1951 to 1969, and that "library costs per student increased at more than 5 percent a year compounded."[18] Staff salaries alone rose at 5.3 percent per student during this period. On the other hand, the wholesale price index during the same two decades rose at less than one percent.

The reason for this discrepancy, as many writers have pointed out, is that in other sectors of the economy the productivity of workers has risen with salaries; if wages go up five percent but labor productivity also rises five percent, there is no increase (at least from this cause) in the price index.

In recent years, however, there have been several developments which have already begun to increase library productivity. Baumol and Marcus list four:

- The achievement of a standard format for bibliographic records in machine-readable form, and the associated production at the Library of Congress and elsewhere of a sizable data base of such records.
- A continuing sharp decrease in the costs of certain components of electronic data processing services.
- Continuing increases in the capacity and reliability of electronic communications channels with concomitant decreases in the unit costs of the channels.
- The creation of evolving, modular, computer-based library systems, which take advantage of the three other changes just mentioned.[19]

The most successful of these systems have been the so-called "on-line" systems, with a number of terminals connected via a computer to a large data base of bibliographic records. These systems allow access to the data in seconds, which speeds up a portion of the process, and they also allow interaction between the operator and the system, which improves communication and helps to reduce the editorial steps required. Because bibliographic information is complex, the associated editorial and clerical operations are also, and making these operations more efficient helps improve productivity significantly.

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[18] William J. Baumol and Matityahu Marcus, Economics of Academic Libraries, American Council on Education, 1973, p. 45.

[19] Ibid., p. 41.

Cataloging. In operations such as cataloging, the use of such systems can help reduce costs even more substantially. The most successful on-line systems allow dozens and even hundreds of libraries to share the work, so that only one library need catalog a title and the rest can use the results without having to repeat the effort. In one recent study of the largest such system (the Ohio College Library Center), 91 percent of the users queried felt that the system allowed catalogers to produce more work per unit of time, and 95 percent said that clerical workers could increase production per unit of time.[20] In another recent study, which covered all of the 47 original members of OCLC, the author concluded that "original" cataloging had been all but eliminated for the smaller libraries, and reduced to well below 20 percent of the total cataloging effort for other types. The time required to catalog books and to produce sets of catalog cards had been reduced in 91 percent of these libraries.[21]

The University of California libraries are now experimenting with two such systems, OCLC and a similar but smaller system based at Stanford University, called BALLOTS (for Bibliographic Automation of Large Libraries using an On-line Time-sharing System). The Ohio College Library Center began as a non-profit corporation in 1967. On-line cataloging services began in August 1971, and the number of users has grown steadily since that time. In 1973, the OCLC membership voted to allow libraries outside of Ohio to participate, and at present the system is used by over 800 libraries in 44 states. In the data base are almost 3 million records, including all of the MARC (Machine-Readable Cataloging) records from the Library of Congress. Participants key in a few letters or numbers (typically a few letters of the author's name and a few letters of the title) for the work they wish to process, and in a few seconds records corresponding to this "search key" are displayed on the screen of the terminal.

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[20] Barbara Evans Markuson, "The Ohio College Library Center," Library Technology Reports, v. 12, no. 1 (January 1976), pp. 92-93.

[21] Joe A. Hewitt, "The Impact of OCLC," American Libraries, v. 7, no. 5 (May 1976), pp. 272-273.

The operator may accept a record as displayed, or modify any part of it for his own purposes, then press a key to order cards. The cards themselves are produced overnight at the center's facilities in Columbus, and are then shipped to the library by mail; if cataloging copy is needed immediately, however, it can be printed out on one of several types of printers that can be hooked to the system. Participating libraries now catalog over 200,000 titles a week on the system, and almost a million and a half catalog cards are printed each week. Symbols of libraries holding each title are also shown on the screen, so the system can (and is) used for interlibrary loan, and (as noted below) there are other functions planned as well.

Despite the obvious advantages--the size of the data base, the high probability that a needed record can be found in the data base, and the opportunity for resource-sharing with other participants--there are problems with OCLC as well. For one thing, the very size of the system is a disadvantage as well as an advantage. Rapid growth has meant that the computers involved have frequently been unable to handle the load efficiently, and "response time"--the time between sending a command to the computer and receiving the response on the screen, a time during which the operator is essentially idle --has on numerous occasions risen from the "normal" seven or eight seconds to several minutes or more. This has led to "feathering"--cutting selected participants off the air during certain periods of the day--and moratoriums on new installations. A more serious drawback is that there is no procedure for preventing the creation of two or more slightly different records for the same book, either by inadvertence or deliberately. Many of the records in the data base are duplicates of this type, and many records are also poorly edited or constructed, so that most users find it necessary to construct a list of libraries whose cataloging they will accept and those they will not.

BALLOTS also began in 1967, but until recently was used by only one institution (Stanford University), and by only some of the libraries at that institution. In 1975, seven public libraries began using it on a partial basis, employing a teletype terminal to search the data base. Other libraries have been added since that time, some using teletype equipment and others using visual display terminals through the TYMNET commercial communications system, or over regular telephone lines. In 1977, there were 33 institutions using the system to one degree or another.

The data base for the system consists primarily of MARC records and records added by Stanford's cataloging staff. Until July 1976, shared cataloging was not possible, because the system could not accept and store records from other institutions. Beginning in that month, however, UC Berkeley became the first library outside Stanford to make use of the system on a shared cataloging basis, adding records to the file and (through the use of a program contributed by the University of California's Universitywide Library Automation Program) receiving catalog cards in return, much as in the OCLC system. By 1977, 24 libraries were on-line to BALLOTS, cataloging approximately 5,000 titles per week.

The greatest strength of the BALLOTS system is its ability to allow searching by a wide variety of data elements, using so-called "natural language"--that is, the actual words of a title or author, or truncated portions of them--and to combine these elements with other data elements in a "Boolean" search technique, as described in Chapter V. Subject searches can also be made, a capacity that OCLC has not yet incorporated. Like OCLC, however, BALLOTS also has its problems. It, too, has occasionally been plagued with poor response time, although in the case of BALLOTS this stems from a different source which is itself a problem: the fact that the system must share a large computer which at any one time is processing a number of other jobs for Stanford University. The size of the data base is much smaller than OCLC's, although academic libraries that have used both find almost as high a percentage of records desired in BALLOTS as in OCLC. As BALLOTS has emerged to network status, its costs have been difficult to pinpoint, and only recently have libraries been able to obtain firm prices in library terms--that is, per catalog card or title cataloged. New rates were announced in July 1976, however, and as the system develops its network organization and equipment this situation may be expected to stabilize.

At present, the OCLC system is being used on a trial basis at UC San Diego, UCLA, UC Irvine and UC Riverside, and BALLOTS is being used experimentally at UC Berkeley, UCLA and UC Davis. These trial installations will enable the University to collect information on the actual costs and efficiency of each system, and it is anticipated that, based on this information, a final decision will be made in 1977 as to which system will be chosen for Universitywide use.

In addition to improving the productivity of the cataloging operation and lowering operating costs in this area, the system chosen will also serve as the primary mechanism for constructing the University's machine-readable data base to be consulted by library users in lieu of the card catalog, as discussed in Chapter V. By 1981, all campuses should be using the system to perform cataloging in Roman alphabet languages, and the records thus created will be automatically added to the data base for public use. At that point, then, only the task of converting older records will remain, and many of these are already in machine-readable form. By the end of 1978/79, over a million records will exist, and the ongoing data base conversion project will add another 5 million by 1985/86.

Serials. The University's data base of bibliographic information on serial titles must also be constructed, because this information will be needed by library users as well. The University has already done much towards building this file. Each campus has converted the majority of its bibliographic information on serials into machine-readable form, and during 1975 and 1976 these files were merged into a single one by a project at the Universitywide Library Automation Program (ULAP), using programs developed by the UC Berkeley Systems Office and ULAP staff. In April of 1976, this effort resulted in publication of the largest Union List of Serials ever created, some 66,000 pages published on 275 microfiche. Over 244,000 records are included in this file. Currently work is under way to develop a system that will allow the file to be updated, both with new records and corrections to existing ones. Through participation in a national project financed in part by private grants--the CONSER, or Conversion of Serials program--the University also is able to have its serial records edited and checked against the authority files at the Library of Congress. The result of these two programs will be a consistent and authoritative, continuously updated file of serial information which can be used by library staff for processing serial titles and consulted by the libraries' users.

In the experience of some libraries, automation can also improve the efficiency of several time-consuming and costly clerical procedures involved in the handling of individual serial issues. Work on a serials-handling system for the University at large has been deferred, however, because it appears that this capability may be available from other sources. The Ohio College Library Center has planned for several years to make such a service available to OCLC participants, and some institutions are already using a pilot version of the service. If the University decides to use OCLC for cataloging, it will naturally give serious consideration to using the serials-handling service as well. The Research Libraries Group (Harvard, Yale, Columbia, and the New York Public Library) has also expressed interest in developing a serials-handling system in cooperation with the University, as has BALLOTS. If none of these alternatives appears feasible, a final possibility to be explored is the re-design and re-programming of the system developed by the UCLA Biomedical Library and used there successfully for several years.

Acquisition Procedures. Automation of acquisition procedures on a systemwide basis has also been deferred, for similar reasons. If the University decides to use BALLOTS for cataloging, it should also be possible to use the acquisition programs already developed as a part of that system. OCLC has also been developing programs to handle acquisition routines, which might be used if OCLC is chosen for cataloging (one study of OCLC found that 76 percent of those libraries surveyed already use the system for pre-order searching, even though such information as whether the book is in print or not does not appear in the record). If neither of these alternatives provides a feasible system, a third possibility to be explored is the further development of a system designed by the UC Irvine library and already used for accounting purposes at UCLA and UC Santa Barbara.

In summary, there are automation projects already under way or soon to be available which will help improve productivity in many areas of library operation, lower costs in some cases, and most importantly provide the needed bibliographic information to the library system's users in a timely and consistent manner.

For the acquisitions and processing area, then, the plan recommends:

1) That funds be provided for acquisition of 609,000 volumes per year;

2) That increases in the acquisition rate beyond this level be sought only if there are significant increases in approved academic programs or enrollment;

3) That allocation of funds within the total provided be based on the formula outlined in this chapter;

4) That sufficient funds be allocated to branch libraries on the campuses to allow access to all material likely to be needed immediately;

5) That purchase of duplicate copies of heavily-used material be pursued more aggressively, using statistical techniques and information generated by the automated circulation systems now being installed;

6) That an on-line cataloging system be selected for the University library system and installed in all cataloging units of the system;

7) That the use of on-line systems for acquisitions and handling of serials be deferred until the costs and benefits of performing such activities through OCLC, BALLOTS, or by other methods can be ascertained, but that automated techniques then be applied to these functions as well.

These steps should help meet the system's performance goals at each level of need.

CHAPTER IX

STAFFING THE LIBRARY SYSTEM

Most of the activities of the University library system have been discussed in detail in previous chapters, and each activity implies certain staffing needs. For the purposes of the discussion, several categories of personnel have been either identified or implied:

- those connected with the selection and acquisition of library materials;
- those who catalog and otherwise process the material and prepare it for use;
- those who assist users in identifying and locating needed materials;
- those who deliver the material and otherwise assist in its use;
- those who provide information and reference service and who give instruction in library use.

In addition to these, of course, there are personnel required for administrative and managerial services and support, and for research in library operations and service.

For budgetary purposes, however, the library operations of the University have normally been divided into two broad categories, one called acquisitions-processing, and the other called reference-circulation. The acquisitions-processing category is conceived as including all of those activities that vary with the rate of collection growth: selection of materials, purchasing, negotiation of exchanges and gifts, receipt of materials and associated record-keeping, searching for bibliographic information (both before and after receipt), cataloging, binding, and marking. The reference-circulation category is seen as including those activities that vary with the population served: circulating materials and providing for their use, teaching the techniques of library use and bibliographical research, answering reference inquiries, assisting graduate students and faculty in their research, and providing both traditional and innovative information services. Other activities, such as the development of automated systems, analysis of operations, research, and management may be viewed as supporting both general areas, and for budgetary purposes are usually distributed proportionally into the two broad categories described.

In the past, budgetary requests for staff in the acquisitions-processing category have been associated with increased acquisition rates, and requests for staff in the reference-circulation category have been associated with increases in the user population (either enrollments or total users). For several reasons, however, this method is inadequate for projecting library staffing needs in the future. In the first place, there is statistical evidence that the number of staff required varies not only with these two factors but also with the total size of the library collection. Statistics for the eighty-eight academic members of the Association of Research Libraries, for example, indicate that the size of the staff does indeed increase with the size of enrollments and annual acquisitions, but at a slower rate. The ratio of volumes held to full-time-equivalent personnel, for example, varies from about 4,000 to one at institutions with less than a million volumes to about 10,000 to one at large institutions such as Harvard and Yale. Apparently as an academic library grows in size *proportionally* fewer staff are required. The relationship is approximately linear, and hence can be used to project the size of staff required by the University of California libraries as they grow in size of collections. Estimates of the staff required on this basis are shown in Tables 17 and 18, projected to the fiscal year 1987/88.

The projections point up two serious problems. In the first place, the number of existing personnel is already insufficient. Hundreds of thousands of volumes of library materials are backlogged in UC libraries awaiting processing for lack of sufficient cataloging staff, and each of the nine campus libraries has had increasing difficulties in meeting the service demands of its users. Yet the projections provide no assurance that these backlogs and service deficiencies could be overcome. On the other hand, following even these conservative projections, the University libraries would require almost half again as many personnel by 1987/88

Table 17

Budgeted F.T.E. Staff Projected to Fiscal Year 1987/88 By Comparison with Staffing Patterns at other Research Libraries

Year	Total, All Campuses
1977/78	2165
1978/79	2266
1979/80	2365
1980/81	2464
1981/82	2562
1982/83	2660
1983/84	2757
1984/85	2854
1985/86	2951
1986/87	3044
1987/88	3135

Table 18

Salary Costs Projected to Fiscal Year 1987/88 By Comparison with Staff Patterns at other Research Libraries (1976 Dollars, in Thousands)

Year	Total, All Campuses
1977/78	$31,604
1978/79	33,084
1979/80	34,530
1980/81	35,975
1981/82	37,406
1982/83	38,837
1983/84	40,253
1984/85	41,669
1985/86	43,086
1986/87	44,443
1987/88	45,772

and additional appropriations for salaries of almost $15 million (not counting salary raises), an increase it would appear unrealistic to expect.

Fortunately, the measures discussed in the previous chapter provide a very real basis for hope that both problems can be solved; that is, that the workload problems can be overcome and that salary costs can be kept in check. These measures, in fact, constitute another reason for abandonment of previous budgetary practice. Automated systems already in operation in many libraries allow processing of material on a more timely basis, reduction in the rate of rise of salary costs, and even the possibility of reducing the number of positions allocated to some operations. As noted in earlier chapters, additional personnel are needed in public service areas, and the savings in technical processing areas can be used to provide this help. Some increase in the total number of staff will still be required, but the rate of increase can be reduced substantially, assuming that the level of enrollment and the level of acquisitions both remain fairly constant.

Cataloging. Particularly in the cataloging area, as discussed in the previous chapter, it appears that dramatic increases in productivity can be attained through the use of on-line shared cataloging systems. Markuson, in her study of 80 users of the OCLC system, found major changes in the following operations (listed in order of the percentage of libraries reporting major changes):

LC card ordering	91.7 percent
Local card production	86.4 percent
Searching for catalog copy	80.0 percent
Preparation of catalog copy	63.8 percent
Preliminary filing	59.7 percent
LC proof slip maintenance	55.9 percent[1]

The reason for most of these changes is obvious: if cards are ordered and received automatically as a result of searches on the terminals, only cards without Roman alphabet characters must be ordered or produced otherwise. The change in preliminary filing arises from the fact that the cards are received already arranged by the computer in preliminary filing order.

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[1] Barbara Evans Markuson, "The Ohio College Library Center," Library Technology Reports, v. 12, no. 1 (January 1976), p. 85.

Markuson also received numerous comments which indicated that the system had enabled libraries to eliminate large backlogs. Once such backlogs are overcome (or if there are no backlogs), it appears that reductions in cataloging staffing levels can then be made. Hewitt's study of the 47 charter members of OCLC found that sixty-three percent had reduced cataloging staff at the time of the survey, with a total of almost 77 net positions dropped; in addition, numerous transfers of personnel to other functions had occurred.[2] Another writer reports that one large university library has dropped 23 positions since it went on-line in 1971.[3] In Markuson's study, "about 85% of the respondents" felt that "OCLC could result in reduction of some clerical positions" (unfortunately, "through an oversight, a parallel question about reduction of professional staff was not asked"). She points out, however, that "OCLC cost savings are not automatic," and that virtually all those libraries surveyed agreed that "cost benefits and savings will not be realized unless careful thought is given to how the OCLC system will be integrated into local operations."[4]

Undoubtedly, also, Parkinson's Law goes into full operation unless care is taken to prevent it, and Hewitt notes that much depends on whether reduction in costs is a library's objective or not:

> Only ten of the charter member libraries described their principal objective for participation as the reduction of operating costs, or, in OCLC's terms, to reduce 'the rate of rise of per unit cost' of library service. Of these, 80% judged the system to be successful in meeting this objective. On the other hand, directors of only 41% of all other libraries stated that this objective had been met in their libraries. It is obvious, therefore, that commitment of individual libraries to this objective is an important factor in its achievement.

He concludes that whether or not such decreases occur "will depend, for the most part, on the aggressive pursuit of this objective by administrators in individual libraries."[5]

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[2] Joe A. Hewitt, "The Impact of OCLC," American Libraries, v. 7, no. 5 (May 1976), pp. 273-274.

[3] Martin R. Miller, Library Networks '74-'75, Knowledge Industry Publications, 1974, p. 5.

[4] Markuson, p. 97.

Circulation. On-line circulation systems such as those now being installed in the University of California libraries are relatively new, but it is clear that (just as with cataloging) they make possible a significant improvement in productivity. At the University of Houston, which has had the system now being installed at the University of California longer than any other institution, personnel costs for the activities involved were reduced from approximately $4,200 per month to approximately $1,000 per month. The system automatically maintains the circulation records, so manual filing and un-filing of transaction records is no longer necessary. Production of overdue notices, recall notices and other documents (including statistical reports) is also handled automatically, so personnel are no longer needed for these activities. In addition, the actual charging out of books is speeded up, and the time required for checking books back in and clearing records is dramatically reduced.

It should be pointed out, however, that only a portion of a library's circulation department is engaged in these activities. Many other staff members are required for shelving and re-shelving of materials, handling reserves, and other operations related to circulation. In addition, it must be noted that most libraries which have installed automated circulation systems have experienced a dramatic increase in circulation, apparently because of the increase in efficiency such systems provide and the fact that they make use of the library easier for the patron. The automated systems do make it possible to handle most activities associated with increased circulation without additional staff, but more personnel will be needed for activities which are unaffected by the system, such as re-shelving of materials. For this reason, the plan contemplates no reduction in circulation staff, and assumes that savings in staff assigned to circulation activities which are automated will be used to handle the expected increase in circulation.

Other Public Service Activities. As noted in Chapter VI, substantial increases are needed in the number of staff assigned to handle inter-campus movement of materials if the University system as a whole is to function efficiently, and if use of the University's collections as a whole is to be maximized. Additional personnel are also needed to provide adequate reference and information services to all categories of users, and for library instruction, as pointed out in Chapter VII. Finally, the increased demands by people not associated with the University for services that can only be provided by the University's libraries must also be accommodated, and this will require additional staffing. For all these reasons, the plan recommends that any staff savings achieved in technical processing operations be used to augment the libraries' public services.

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[5] Hewitt, p. 274.

Staffing projections based on these recommendations, and projected to fiscal year 1987/88, are shown in Tables 19 and 20. It should be noted that these projections assume that savings through automation will be sufficient to accommodate all of the needs mentioned above. Further experience with both automation and public demand in the coming years will be required to validate these projections, however, and it is possible that future workload analyses will indicate a pressing need for additional public service staff.

Further Considerations. At least three other points should be mentioned as well. First, the projected staffing levels are shown for the University as a whole, not for individual campuses, because the particular circumstances in individual libraries vary widely, and flexibility in implementing automated systems and staff changes is both necessary and desirable. Existing allocations of personnel amongst the campuses may also be inequitable, and a University committee is presently attempting to devise a formula, based on identifiable workload factors, that will assure equitable distribution of staff in all categories.

Second, and more importantly, the impact of any changes in work assignments on individuals must be carefully considered. Attrition may allow some changes, but re-training of staff is likely to be necessary in some instances. Re-training itself, however, should be looked upon not as an unpleasant necessity, but as a positive opportunity for increased employee development programs. Another University committee, in fact, is already at work on the development of one

Table 19

Budgeted F.T.E. Staff Projected to Fiscal Year 1987/88 Based on Library Plan

Year	Total, All Campuses
1977/78	2165
1978/79	2168
1979/80	2175
1980/81	2180
1981/82	2183
1982/83	2183
1983/84	2185
1984/85	2185
1985/86	2185
1986/87	2185
1987/88	2185

Table 20

Salary Costs Projected to Fiscal Year 1987/88 Based on Library Plan (1976 Dollars, in Thousands)

Year	Total, All Campuses
1977/78	$31,604
1978/79	31,658
1979/80	31,758
1980/81	31,832
1981/82	31,877
1982/83	31,877
1983/84	31,909
1984/85	31,909
1985/86	31,909
1986/87	31,909
1987/88	31,909

such program, which would provide for voluntary rotation of employees not only among departments within a campus system but between different campuses. This and similar programs will provide a broader base of experience to such employees, open up expanded career opportunities, enhance communication among libraries and help develop a Universitywide sense of community. Course work required for re-training should of course be fully reimbursed, and financial support should also be provided for job-related education and training.

Finally, the cumulative effect of the proposed staffing in financial terms should be noted. Since staff costs will no longer rise at the same rate, there is a double or compound savings. In 1976 dollars, the projected annual savings amounts to almost $14,000,000 by 1987/88, and a cumulative total over the next 10 years of over $76,000,000. In addition, salary increases will not of course be needed for staff not hired, so the total projected savings may be several times this amount.

In summary, for staffing, the plan recommends:

1) That the practice of increasing staff in proportion to increases in acquisitions be abandoned, at least for the time span of the plan, and that the increased level of acquisitions recommended in Chapter VIII be processed with the use of automated systems, and without additional staff;

2) That staff in the public services area (including reference and circulation) be increased in proportion to increases in enrollment, as in the past;

3) That the public service staff of the libraries also be augmented by staff savings in technical processing areas, in order to accommodate the expected increase in the use of the libraries, and to improve intercampus and intersegmental use of library resources;

4) That continued study be given to the development of an allocation formula to assure equitable distribution of staff in all categories among the campuses; and

5) That positive and imaginative retraining programs be developed for those personnel who transfer from one type of activity to another, and that employee development programs in general be strengthened.

CHAPTER X

HOUSING THE LIBRARY SYSTEM

As noted in Chapter III, the rapid growth of academic libraries during the last several decades has created severe problems in housing the ever-increasing collections. Despite what was earlier referred to as "the greatest flowering of academic library building experience this country has ever known," the rate of building has not kept pace with the growth of collections. In one writer's picturesque phrase, it has been a case of Sisyphus nailing up bookshelves.[1]

The problem at the University of California has been no less acute than nationally. Despite a fall-off in acquisition rates, as discussed in Chapter VIII, the University continues (and must continue) to acquire new knowledge as it is published, and accordingly must find some place to put the additional materials. Problems mentioned in earlier chapters--such as insufficient funds for books and staff--are real and serious, but the space problems of the libraries are rapidly becoming desperate. There have been, after all, some funds for purchase of additional materials, and some additional staff positions have also been funded, but no funds for construction of library facilities have been approved since the early 1970's. Except for slight additions through remodeling, the amount of library space has remained almost constant since 1971, as indicated in Figure 3. The projects at Santa Barbara, Santa Cruz, and San Diego, which were approved several years ago, will soon be completed and will add some additional capacity, but as indicated below these projects will provide only a temporary palliative at those campuses. The basic problem of housing increasingly larger collections will remain.

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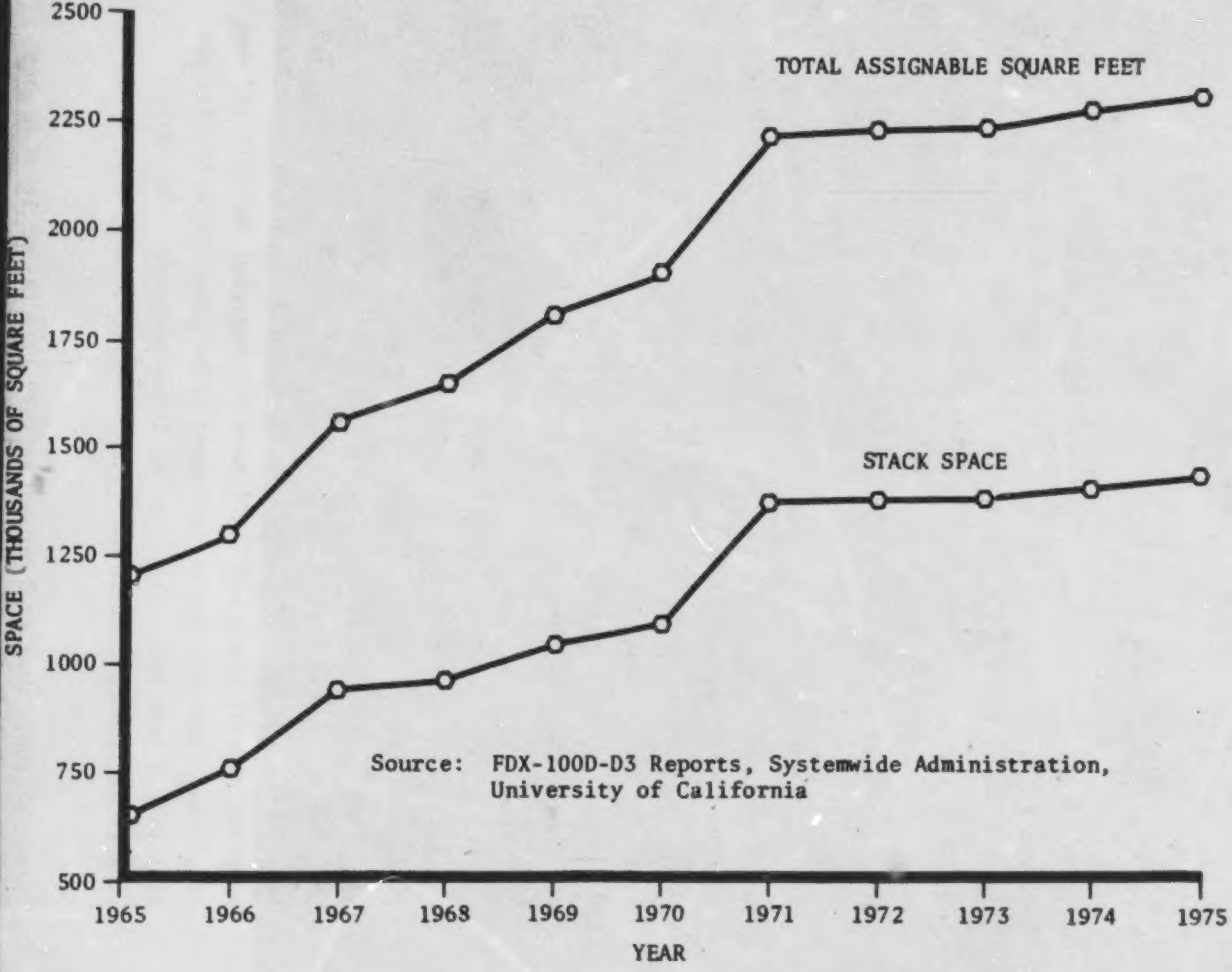
[1] Robin Wilson, "Must We Burn Our Books?" *The Chronicle of Higher Education*, v. 12, no. 18 (July 12, 1976), p. 24.

Figure 3

Growth of Library Space
(Assignable Square Feet)



Source: FDX-100D-D3 Reports, Systemwide Administration,
University of California

The shortage of space on a systemwide basis is summarized in Table 21. Using standard formulas, as described below, the libraries are at present deficient by almost a quarter of a million square feet. The need for space will grow as more volumes are added to the collections, of course, and at the projected rate of growth the additional space needed will be over three quarters of a million square feet in 10 years.

The seriousness of the problem naturally varies from campus to campus. Undoubtedly the worst case is at Berkeley, where the shelf space for library materials was exhausted in 1968. Since that time, not only the main library but seven branch libraries have been forced to store materials in a warehouse in Richmond. At present, approximately one million volumes are housed in this off-campus facility, a structure that is seriously inadequate in many ways, as noted later in this chapter.

After Berkeley, the most serious space problem is at San Francisco. The library is badly overcrowded (in addition to being badly arranged), and space is so short that the Reserve Book Room has had to be moved to a completely separate location; if a student finds that a book is on reserve, he is now obliged to go outside the building and walk to another facility to obtain it.

Problems on other campuses are only slightly less severe. The UCLA libraries as a whole are about 400,000 volumes over capacity, and some branches are so overcrowded that potential users must be turned away. The main libraries at Davis and Irvine are also becoming increasingly crowded, and are already over their designed capacity. Within three to four years, the other campuses will also be out of space.

Investigation of Alternatives. All of these calculations are projected on the basis of present methods of housing the University's libraries. Considering the magnitude of the problem, however, coupled with the fact of rapidly escalating construction costs, it has become increasingly obvious that all reasonable alternatives to present housing methods should be explored.

To accomplish this task, a research team was formed during the summer of 1976, under the leadership of Donald Thompson, Assistant to the Executive Director of Library Planning. Members of the team

Table 21

Additional Library Space Required (in Assignable Square Feet) by the University of California Libraries

1977 - 1988

Year	Space Required
1977/78	249,000
1978/79	299,000
1979/80	353,000
1980/81	368,000
1981/82	431,000
1982/83	496,000
1983/84	561,000
1984/85	622,000
1985/86	685,000
1986/87	747,000
1987/88	808,000

visited each campus, and collected data on the size and characteristics of each of the collections, the nature of existing space and space problems, the patterns of recorded use of materials, and other information which bore directly or indirectly on the space problem. With this information, plus a large amount of additional information gathered from library space planning literature, administrative records, and elsewhere, the team then constructed a computerized simulation model designed to calculate the effect, in both space and funds required, of each of a number of alternatives, singly and in combination. Research on the model is continuing, but sufficient data are now available to enable the University to make concrete and supportable conclusions and recommendations.

Space for Library Staff. In general, library space may be viewed as falling into three categories: space for library staff, space for library users, and space for library materials. Of these three, space for library staff is, by its nature, the least flexible component; or stated another way, the available alternatives for this category are the fewest. If the staff are there, they naturally must have a place to work, and in most cases the nature of the work requires that it be performed in the library building. They cannot be "compacted" to any significant degree, as the materials can, nor can they perform their activities elsewhere, as can readers (for example) who use the library merely as a place to study.

In calculating the amount of space required for staff, the number of budgeted FTE (full-time equivalent) positions must first be converted to actual FTE. In the general assistance category of staff, salaries are lower than average, so the funds used for this category generate more actual FTE staff than are budgeted. The present ratio of actual to budgeted FTE staff was therefore computed for each campus, and for the purposes of the model it was assumed that this ratio would remain constant throughout the period in question.

The next step is to convert the number of actual FTE staff to headcount. Many postions are part-time, and the number of staff members on duty at any one time may thus be significantly higher than the FTE figure. For this purpose, the model employs a formula that has been used by the State for space planning in the past. Actual FTE figures are multiplied by 1.25, and the result is then multiplied by 135 assignable square feet (asf) to arrive at the space allotment. Simplified, this results in 168.75 asf per actual FTE staff. It should be noted that this allowance is intended to cover not only the actual work stations of the staff, but all space for library materials being processed, work rooms, storage of supplies, equipment, public service desks, and indeed any assignable areas not covered by provisions for users and library materials.

The actual FTE staff and the assignable square feet that would be required for staff according to this formula, from 1977/78 to 1987/88, are shown in Table 22. The third column indicates the space requirements if the staff grows according to the same pattern as research libraries in the past (as discussed in Chapter IX), and the fifth column indicates the space required for staff as projected by this plan.

Space for Library Users. For users, the alternatives are fairly simple, and are based on decisions as to what proportion of the potential number of users to provide seating for. Most formulas used by libraries and state planning agencies for this purpose are expressed simply as a percentage of the student body, ignoring faculty, university staff, and members of the public as users. The square footage allotted per user will of course depend on the type of seating provided, and may range from 25 asf for seating at tables, to 75 or 100 asf for faculty studies, if the latter are provided for separately.

In practice, libraries vary in the percentage of the student body for whom seats are actually provided, ranging from 10 percent in the case of some commuter colleges to 40 percent or more in the case of some residential universities. Planning guides used by the University and the State in the past have been based on 25 percent of the student body, and this is the figure most often recommended by professional library building consultants. The calculations in the plan therefore assume that seating will be provided for 25 percent of the three-term average head count enrollment, and that 25 asf will

Table 22

Space Required (ASF) for Library Staff 1977-1988

Year	Actual FTE Staff, Based on Past Staffing Patterns	Space Required (ASF)	Actual FTE Staff, Based on Library Plan	Space Required (ASF)
1977/78	2379	401,000	2379	401,000
1978/79	2471	417,000	2383	402,000
1979/80	2566	433,000	2390	403,000
1980/81	2661	449,000	2395	404,000
1981/82	2750	464,000	2398	405,000
1982/83	2844	480,000	2399	405,000
1983/84	2933	495,000	2401	405,000
1984/85	3022	510,000	2401	405,000
1985/86	3111	525,000	2401	405,000
1986/87	3194	539,000	2401	405,000
1987/88	3283	554,000	2401	405,000

be allotted for each of these users. The resulting requirement for user space, based on the projected enrollments given in Chapter I, is indicated in Table 23.

Space for Non-Book Materials. The remaining category--library materials--can be broken down further into two broad sub-categories: bound volumes (both monographs and serials), and non-book materials (maps, manuscripts, pamphlets, recordings, documents not counted as volumes, and microforms). For convenience, the "non-book" category was defined to include equipment (such as microform readers) required to use non-book materials. As in the case of staff and users, the size of this sub-category was calculated and projected to the year 1987/88. Counts of all non-book materials presently in the UC libraries were collected from the campuses, and the growth rates for each category were then projected by linear regression on the statistics for the past ten years. To project the number of microform readers, the ratio of readers to total microforms was computed separately for each campus, and it was assumed that campuses would continue to acquire readers in the same ratio as their microform collections grew.

The space required for most non-book materials was calculated on the basis of the so-called "Wellman Standards," developed by Vice President Wellman some years ago. The allowances, by category, are shown in Table 24. For manuscripts, the space needed was calculated from the actual experience at Berkeley's Bancroft Library, which has a large collection. Documents not counted as volumes were assumed to require the same space, on the average, as pamphlets.

The resulting projections of space required for non-book materials are shown in Table 25.

Space for Bound Volumes. The last category (or rather, sub-category) to be considered is the amount of space required for bound volumes. This amount may vary greatly, depending on the method of shelving adopted. In an open-stack library, as virtually all of those at the University of California are, the space required varies from 10 to 15 volumes per asf, or stated conversely, from .066 to .1 asf per volume. Using other methods of shelving, however, the space

Table 23

Space Required (ASF) for Library Users (at 25 Percent of Student Enrollment), 1977-1988

Year	Berkeley	Davis	Irvine	Los Angeles	Riverside	San Diego	San Francisco	Santa Barbara	Santa Cruz	Total, All Campuses
1977/78	174,000	106,000	58,000	193,000	31,000	64,000	23,000	88,000	39,000	774,000
1978/79	173,000	106,000	60,000	193,000	31,000	66,000	23,000	88,000	39,000	778,000
1979/80	172,000	107,000	62,000	193,000	31,000	66,000	24,000	89,000	40,000	785,000
1980/81	172,000	108,000	64,000	194,000	32,000	67,000	24,000	89,000	40,000	791,000
1981/82	172,000	109,000	64,000	194,000	32,000	67,000	25,000	89,000	41,000	793,000
1982/83	172,000	109,000	65,000	194,000	32,000	67,000	25,000	89,000	41,000	795,000
1983/84	172,000	110,000	65,000	194,000	32,000	67,000	25,000	89,000	41,000	796,000
1984/85	172,000	110,000	65,000	194,000	32,000	67,000	25,000	89,000	41,000	796,000
1985/86	172,000	110,000	65,000	194,000	32,000	67,000	25,000	89,000	41,000	796,000
1986/87	172,000	110,000	65,000	194,000	32,000	67,000	25,000	89,000	41,000	796,000
1987/88	172,000	110,000	65,000	194,000	32,000	67,000	25,000	89,000	41,000	796,000

Table 24

Space (ASF) Required for Various Categories of Non-Book Material

Category	ASF Required	Items Per ASF
Maps[1]	0.042	24
Microfiche[1]	0.00087	1150
Microfilm[1]	0.02175	46
Pamphlets[1]	0.0087	115
Sound Recordings[1]	0.0174	57.5
Manuscripts[2]	0.0002014	4965
Documents not Counted as Volumes[3]	0.0087	115
Microform Readers[1]	25.0	0.04

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[1] From "Wellman Standards" (Office of the President, Planning Guide for Libraries: Unit Area Allowances, May 24, 1968).

[2] From Bancroft Library, UC Berkeley.

[3] Assumed to be the same as pamphlets.

Table 25

Space Required (ASF) for Non-Book Materials, 1977-1988

Year	Berkeley	Davis	Irvine	Los Angeles	Riverside	San Diego	San Francisco	Santa Barbara	Santa Cruz	Total, All Campuses
1977/78	36,000	15,000	4,000	45,000	8,000	13,000	400	18,000	6,000	144,000
1978/79	37,000	16,000	4,000	47,000	8,000	13,000	500	19,000	6,000	151,000
1979/80	39,000	16,000	4,000	48,000	9,000	14,000	500	21,000	6,000	157,000
1980/81	40,000	17,000	4,000	50,000	9,000	15,000	500	22,000	7,000	164,000
1981/82	42,000	18,000	4,000	51,000	9,000	16,000	600	23,000	7,000	171,000
1982/83	43,000	19,000	4,000	53,000	10,000	17,000	600	25,000	8,000	178,000
1983/84	44,000	19,000	5,000	55,000	10,000	18,000	600	26,000	8,000	186,000
1984/85	46,000	20,000	5,000	56,000	10,000	19,000	600	28,000	8,000	193,000
1985/86	47,000	21,000	5,000	58,000	11,000	20,000	700	29,000	9,000	201,000
1986/87	49,000	22,000	5,000	59,000	11,000	21,000	700	31,000	9,000	207,000
1987/88	50,000	22,000	5,000	61,000	11,000	22,000	700	32,000	10,000	214,000

required can be reduced to a much smaller figure, and if the volumes are converted to microform the space required becomes even less. Because of this wide range of options, it is obvious that the treatment of bound volumes is likely to offer the most fruitful area of investigation of alternatives, and in fact most of the efforts of the research team have been concentrated on this aspect.

New Construction on Campus. The most obvious method of housing bound volumes is to continue as in the past, and house them by constructing new open-stack library facilities as needed. The costs of this approach were therefore calculated, not only because it is the most obvious, but also to serve as a base for consideration of other alternatives.

For open-stack facilities, as indicated above, most planning documents estimate storage of bound volumes at 10 to 15 volumes per square foot. For the purposes of calculations in the model, a median figure of 12.5 volumes per asf (0.08 asf per volume) was used. This factor was applied to the projected number of volumes to be housed (as outlined in Chapter VIII), and the result added to the space required for all other purposes. The result was a projection of total library asf required for each campus for the next 10 years. From this total, the existing asf already available on each campus (including approved projects under construction or about to be completed) was subtracted. For each year in which the result was a negative figure, the existing space was assumed to be adequate. A positive number indicated the additional space needed. The projections for the University as a whole on this basis, and assuming a continuation of past research library staffing patterns, are shown in Table 26. Table 27 indicates the projections for each campus based on the staffing recommended in this plan.

The costs of providing the required new facilities for each campus, including the necessary shelving, were then calculated, using figures supplied by the Office of the Coordinator of Physical Planning in Systemwide Administration. For libraries on campuses in the South, the average cost is estimated to be between $98 and $113 per

Table 26

Total New Library Space (ASF) Required, 1977-1988, Assuming On-Campus, Open-Stack Facilities and Staffing Based on Past Research Library Patterns

Year	Total, All Campuses
1977/78	249,000
1978/79	312,000
1979/80	377,000
1980/81	401,000
1981/82	476,000
1982/83	549,000
1983/84	626,000
1984/85	703,000
1985/86	780,000
1986/87	857,000
1987/88	934,000

Table 27

Total New Library Space (ASF) Required, 1977-1988
Assuming On-Campus, Open-Stack Facilities, and Staffing Recommended in the Plan

Year	Berkeley	Davis	Irvine	Los Angeles	Riverside	San Diego	San Francisco	Santa Barbara	Santa Cruz	Total, All Campuses
1977/78	114,000	20,000	18,000	81,000			16,000			249,000
1978/79	128,000	27,000	24,000	94,000		3,000	18,000	5,000		299,000
1979/80	140,000	35,000	24,000	108,000		10,000	20,000	13,000	3,000	353,000
1980/81	121,000	43,000	31,000	109,000	5,000	10,000	23,000	19,000	7,000	368,000
1981/82	136,000	51,000	36,000	122,000	8,000	17,000	24,000	25,000	12,000	431,000
1982/83	152,000	59,000	41,000	136,000	12,000	23,000	26,000	31,000	16,000	496,000
1983/84	168,000	67,000	45,000	149,000	16,000	29,000	28,000	38,000	21,000	561,000
1984/85	184,000	74,000	49,000	162,000	20,000	35,000	29,000	44,000	25,000	622,000
1985/86	200,000	81,000	54,000	175,000	24,000	41,000	31,000	50,000	29,000	685,000
1986/87	216,000	88,000	58,000	189,000	27,000	48,000	32,000	56,000	33,000	747,000
1987/88	231,000	95,000	62,000	202,000	31,000	54,000	34,000	62,000	37,000	808,000

asf, the low figure representing new buildings, and the higher representing additions to existing buildings. For libraries on campuses in the North, the comparable costs are estimated to be approximately 10 percent higher. These costs, it should be noted, do not include any renovation of existing structures to correct seismic deficiencies, nor do they include the cost of land, which for purposes of this calculation is assumed to be free.

The cumulative costs of this alternative over the ten-year period in question are approximately $106,000,000, assuming continuation of past research library staffing patterns. With the staffing recommended in Chapter IX, the cumulative costs of this alternative are approximately $89,000,000, as indicated in Table 28. The latter figure is used as the "base case" in considering all other alternatives.

Microform. The alternative of storing library materials in microform has been discussed (and practiced) for many years. Scholars are now accustomed to using newspapers in this form, and secondary schools and colleges are making increasing use of periodicals in microform as well. There is still a substantial amount of user resistance to microforms in research libraries because of a variety of problems in the production of the material and the design of readers for using it,[2] but this resistance appears to be lessening. The big advantage of microform, however, is that the space required for storage of the material is substantially reduced, so it is obviously worthwhile to examine the possibility that increased use of microforms might help alleviate the library space problem and reduce the costs of housing library materials.

There are various ways in which such a strategy might be pursued, and the research team examined three of them. The first and most radical would be to convert to microform all volumes that could

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[2] For an analysis of these problems, see Stephen R. Salmon, "User Resistance to Microforms in the Research Library," Microform Review, v. 3, no. 3 (July 1974), pp. 194-199.

Table 28

Estimated Cost of New Library Space Required for On-Campus, Open-Stack Facilities 1977-1988 Assuming Staffing Recommended in the Plan

Campus	Estimated Cost
Berkeley	$26,733,000
Davis	11,015,000
Irvine	6,590,000
Los Angeles	21,296,000
Riverside	3,298,000
San Diego	5,695,000
San Francisco	3,901,000
Santa Barbara	6,577,000
Santa Cruz	4,325,000
TOTAL, ALL CAMPUSES	$89,430,000

not be housed in existing facilities. For this purpose, quotations on the cost of such conversion were obtained from commercial firms. Because the cost of filming serials is much more than the cost of filming monographs, separate figures were obtained, and a weighted average was then calculated, based on the estimated proportion of each type of material to be filmed. The resulting figure was $34.63 per volume. The cost of the space required by the full-size volume, at .08 asf per volume and an average construction cost of approximately $110 per asf, is only $8.80, however, so that even if the resulting microform occupied no space, the cost of this alternative is much greater than the cost of new construction.

A second alternative that was considered is acquiring those materials that are already in microform and commercially available, and substituting these for their bound-volume equivalents. To explore this possibility, a sampling of 9,000 titles was checked by the largest commercial vendor of library microforms, and a report was furnished by the vendor on those titles that could be supplied, with their costs. Virtually no monographs were available, so the calculation of possible savings was based solely on periodical titles. Table 29 indicates the results of the calculation. Savings in space would indeed result, but the savings in construction costs would be more than offset by the combined cost of the microfilm, the additional microfilm readers required, and the space required for both the film and the readers.

The third microform alternative considered was subscription to microform copies of current journals (if microform copies are commercially available) in addition to subscriptions to the full-size originals. The originals would still be needed, because most titles for which microform copies are available are high-use journals, but the full-size copies would be discarded after two or three years and the microform retained as the permanent copy, instead of binding the original issues.

The analysis of this alternative is shown in Table 30. Again, samples were taken and availability of titles was ascertained, then projected on a systemwide basis. The experience of UC libraries to

Table 29

Cost of Replacing Existing Serial Files with Microfilm

1.	Estimated titles available	24,000
2.	Average cost per title	$249
3.	Total cost to acquire all titles	$5,976,000
4.	Average number of volumes per title	33.63
5.	Estimated number of volumes to be replaced	807,000
6.	Asf to be freed at 0.08 asf per volume	65,000
7.	Cost of released asf at average cost of $110 per asf	$7,150,000
8.	Average number of reels per title	13.77
9.	Estimated number of reels to be housed	330,000
10.	Asf needed for housing of reels, at .02175 asf per reel (Wellman standards)	7,000
11.	Cost of asf for housing of reels, at $110 per asf	$770,000
12.	New film readers required at 2010.15 reels per reader (present average)	164
13.	Number of readers required over 10-year period, assuming depreciation over 5 years	328
14.	Cost of readers at $750 per reader	$246,000
15.	Asf required for 164 readers at 25 asf per reader	4,000
16.	Cost of asf for readers, at $110 per asf	$440,000
17.	Cost of changing bibliographic records at $1.00 per title	$24,000
18.	Net (additional) cost over 10-year period (Lines 3 + 11 + 14 + 16 + 17 - 7)	$306,000

Table 30

Costs of Subscribing to Current Journals in Microform in Lieu of Binding

1.	Estimated titles available	20,000
2.	Estimated titles to be acquired in microform	10,000
3.	Average annual cost per title	$6.80
4.	Total annual subscription cost	$68,000
5.	Total subscription cost over 10-year period	$680,000
6.	Physical volumes replaced at an average of 1.25 volumes per title per year	125,000
7.	Asf to be freed at 0.08 asf per volume	10,000
8.	Cost of released asf, at average cost of $110	$1,100,000
9.	Number of reels of film to be housed, at one reel per title per year	100,000
10.	Asf required for housing of reels, at .02175 asf per reel (Wellman standards)	2,000
11.	Cost of asf for housing of reels, at $110 per asf	$220,000
12.	New film readers required at 2010.15 reels per reader (present average) (first year)	5
13.	New film readers required by 10th year	50
14.	New film readers required over 10-year period, assuming depreciation over 5 years	75
15.	Cost of readers at $750 per reader	$56,000
16.	Asf required for 50 readers (line 13) at 25 asf per reader	1,000
17.	Cost of asf for readers, at $110 per asf	$110,000
18.	Binding costs saved, at $8.50 per volume	$1,063,000
19.	Cost of changing bibliographic records, at $1.00 per title	$10,000
20.	Net savings over 10-year period (Lines 5 + 11 + 15 + 17 + 19 - 8 - 18)	$1,087,000

date, however, has been that many of the periodical titles available in microform are unsuitable for research use in that form, because of the small size of the print in the original publication, the length of the articles, or the existence of illustrations made less usable by reduction to microfilm. In practice, only about half of the titles available appear to be appropriate for research libraries, so the costs are projected on the assumption that only 50 percent of those available would be acquired.

It should be noted that in this alternative, a double savings results, not only from the space saved but also from the binding costs avoided. The net result is a substantial savings of over a million dollars during the 10-year period under consideration. In addition, there are important secondary benefits from this approach:

- the material can be more easily preserved, because microfilm lasts almost indefinitely if processed and stored correctly, whereas the paper on which most journals are printed begins to deteriorate after two or three decades;
- the possibility of theft (a particular problem with journal issues) is sharply reduced, and the microfilm copy provides a back-up resource during the first two or three years if the full-size copy is in use or missing;
- most importantly of all, from the user's point of view, the journals need not be removed at a time when they are near the peak of their usefulness and sent to the bindery, there to remain inaccessible for several months.

Librarians and appropriate faculty members must review each title to insure that it is suitable for retention in microform, a workload factor that has not been costed, but the advantages of this approach would still appear to make it worthwhile to pursue.

Weeding. Another approach to be considered is weeding; that is, simply discarding volumes that apparently are of no use, or that have outlived their usefulness. This approach has the appeal of simplicity, but it involves several difficulties.

In the first place, it is one thing to agree that "useless" books should be discarded, but quite another to identify the precise books that are meant. However, as noted later in this chapter, there is some evidence that the likelihood of future use may be predicted with a reasonable degree of accuracy on the basis of the date of last recorded circulation. For the purposes of calculating the costs and potential savings of this alternative, then, it was assumed that works which had not circulated within the last 12 years would be discarded when there was no longer sufficient space to house them in existing campus facilities. Using the statistics on circulation history gathered from each campus, and the data on existing space available, the number of volumes that would be weeded under this alternative was projected to the year 1987/88, and is shown in Table 31. By the end of the 10-year period, as indicated, a total of 5,758,000 volumes would have been discarded.

The costs of the weeding process itself include identifying materials in the appropriate categories and changing the bibliographic records to reflect the fact that the library no longer owns them. For the purposes of the model, these costs are estimated at $1.00 per volume, and the cost of the weeding process is therefore $5,758,000. Some additional campus construction would have to take place during the next 10 years to house those items that do not fall into the categories to be weeded, and the cost of this construction must therefore be added to the cost of this alternative. The total cost of the weeding alternative over the 10-year period is thus estimated at $44,588,000, a savings over the "base case" of $44,842,000.

At this point, however, a second serious problem with the weeding alternative must be considered. Any method of selecting or discarding materials that is purely automatic--i.e., that does not allow for the exercise of judgment--runs a serious risk that important errors will be made. A famous case in point arose from a seemingly sensible dictum laid down by Sir Thomas Bodley when he established the famous Bodleian Library at Oxford in 1611: that when "better editions" of a work appeared, the earlier editions should "be clean made away, as being wholly superfluous." Unfortunately, the Bodleian Librarian, in following this regulation to the letter, disposed of the Shakespeare First Folio when the library acquired the

Table 31

Estimated Number of Volumes in the University of California Libraries That Would Be Discarded Under the Weeding Alternative 1977-1988

Year	Cumulative Number of Volumes Weeded
1977/78	2,495,000
1978/79	2,769,000
1979/80	3,147,000
1980/81	3,506,000
1981/82	3,926,000
1982/83	4,277,000
1983/84	4,606,000
1984/85	4,932,000
1985/86	5,258,000
1986/87	5,518,000
1987/88	5,758,000

Third! (There is a happy ending--the Folio was recovered some 280 years later, although at a fairly substantial price.) Most librarians of any experience can relate similar if less dramatic examples.

In order to avoid the likelihood of intellectual tragedies, then, it appears essential that all items selected for discard be reviewed, preferably by "an intelligent, humane, book-loving librarian" who has at least "a touch of the Alexandrian tradition."[3] The cost of this review is estimated at $.70 per volume,[4] so the total processing cost of each volume considered for weeding becomes $1.70. For the 5,758,000 volumes involved, this amounts to $9,788,000. It was assumed, somewhat conservatively, that perhaps 20 percent of the items considered for weeding would be retained, so the predicted number of volumes to be discarded becomes 4,606,400. The volumes not discarded will of course add to the amount of additional construction needed on campus, and this raises the total cost of the weeding alternative to $56,384,000. This is still a substantial savings over the "base case"--an estimated $33,046,000--but as noted below there appear to be even more economical and attractive alternatives that do not involve the risks inherent in weeding. The weeding alternative is therefore not recommended.

Differential Housing. The final approach to be considered is a differentiated approach to shelving of the materials. Fussler and Simon note that "it has long been assumed in American university libraries that all books not actually in use should be immediately available and shelved with all other books on the subject," but that this "presumed necessity for the immediate availability of books may deserve closer examination when the cost of providing it is compared with possible alternatives."[5]

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[3] Ray L. Hefner, quoted in Robin Wilson, "Must We Burn Our Books?" p. 24.

[4] Based on calculations in Lee Ash, Yale's Selective Book Retirement Program, Shoestring Press, 1963, pp. 48-49.

[5] Herman H. Fussler and Julian L. Simon, Patterns in the Use of Books in Large Research Libraries, University of Chicago Press, 1969, pp. 1-2.

As noted in Chapter IV, not all books are needed immediately; there are, in fact, gradations in the immediacy of need for materials, and recognition of these gradations should enable the University to respond in a differentiated way to user's needs. By doing so, in fact, it should be possible to provide a higher degree of user satisfaction at all levels, as discussed/in previous chapters.

So far as housing of materials is concerned, this means that alternatives to the conventional methods of shelving may appropriately be considered. Typically, alternative shelving methods involve more compact arrangement of books on the shelves, and may use mechanical devices to store and retrieve the books. By some methods, as many as 80 or more volumes per asf may be shelved, as opposed to 10 to 15 volumes per asf in conventional libraries.

Estimating the Amount of Material to be Placed in Compact Shelving. For the purpose of projecting the amount of material that might be considered for such compact shelving, the same approach was used as for the weeding alternative; that is, it was assumed that only materials that are likely to be used infrequently would be eligible for such treatment. This assumption is important, because some degree of inconvenience to the user is inevitable in such techniques. As discussed later, the ability of the user to browse (or, more precisely, to consult bodies of material on the same subject) may be reduced, depending on the method employed. The location of the materials may also be remote from a campus, which imposes a delay in delivery of the material. Only if the need to consult such materials is likely to be intermittent and relatively infrequent, then, should they be considered for compact shelving.

For the space model, the amount of material eligible for such treatment was projected by calculating the number of volumes that have not circulated within the last 12 years. This approach is based on a number of studies, all of which indicate that the best predictor of future demand is the date of last circulation. In a landmark study, Fussler and Simon analyzed various aspects of the use of books in the University of Chicago library, and concluded that "past use" is "an excellent and by far the best predictor of future use," past use being defined as "the number of years between the last use of the book and the examination for storage."[6] They also studied usage at Northwestern University, Yale University and the University of California at Berkeley, and determined that the same criterion could be applied effectively at those institutions. Trueswell reached the same conclusion in analyzing use patterns at the University of Massachusetts library and at Northwestern.[7]

Fussler and Simon also determined that the use of books in the library was highly correlated with circulation, and that even though there "may be 3 to 9 times as much browsing as recorded use," "books that develop little recorded use develop little browsing, and books that develop much recorded use develop much browsing."[8] Others have demonstrated the same relationship at other institutions.[9] In determining the amount of material that may be considered eligible for shelving in the regional facilities then, it appears reasonable to use the criterion of last circulation date as the best predictor of future use of both kinds, both circulation and use within the library.

It must be emphasized, however, that this criterion is used only to estimate the amount of material considered eligible for compact shelving, and only for the purposes of the space model and for system-wide consistency in planning. The selection of specific items to be placed in the facilities would be made by each campus, on whatever basis seems appropriate for that campus. It should also be pointed out that the actual selection decisions, under this alternative, are reversible; unlike weeding, if errors in predicting future usage are made, the error can be rectified simply by moving the items in question back to the campus libraries. It is of course assumed that campuses will select for compact shelving only materials that can be retrieved effectively through the computerized location systems discussed in earlier chapters. It is also assumed that appropriate members of the faculty will participate in making the selection decisions. As Fussler and Simon themselves comment, "there is little question that the overall effectiveness of any formula for selecting books for storage would be improved considerably if one or more scholars reviewed the titles recommended for storage."[10]

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[6] Fussler and Simon, pp. 143-144.

[7] Richard W. Trueswell, "Growing Libraries: Who Needs Them? A Statistical Basis for the No-Growth Collection," in Farewell to Alexandria, edited by Daniel Gore, Greenwood Press, 1976, pp. 80-84, 90-92.

[8] Fussler and Simon, p. 115.

[9] See William E. McGrath, "Correlating the Subjects of Books Taken Out of and Books Used Within an Open-Stack Library," College & Research Libraries, v. 32, no. 4 (July 1971), pp. 280-285; and Theodora Andrews, "The Role of Departmental Libraries in Operations Research Studies in a University Library," Special Libraries, v. 59 (October 1968), pp. 638-644.

The calculations that follow, as with the weeding alternative, also assume that only when there is no space in existing campus facilities would material be moved into compact shelving. The number of volumes involved is therefore the same as in Table 31, i.e., 5,758,000 volumes by 1987/88. For the purposes of the model, it is also assumed that all non-book materials will be stored in existing facilities, and that only monographs and bound volumes of serials will be placed in compact shelving. In actuality, some non-book materials would undoubtedly be moved to compact shelving instead of some bound volumes, but this would not affect the calculations significantly.

Methods of Compact Shelving. For the actual shelving of these materials, there are many alternatives, and the research team examined a wide range of methods. The systems considered the most attractive, in terms of economy and proven reliability, are compared with conventional shelving techniques on Table 32.

Those numbered 2, 3, and 4 are mechanical systems that reduce the amount of space needed and the unit cost of shelving per volume, even though a significant investment in equipment is required. As indicated, the most economical system of this type appears to be one manufactured by Hallowell.

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[10] Fussler and Simon, p. 144.

Table 32

Costs of Shelving, by Different Methods, for a Hypothetical Collection of 3 Million Volumes

SYSTEM	EQUIPMENT				SPACE			COST OF LAND	TOTAL COST, EQUIPMENT SPACE & LAND	COST PER VOLUME
	VOLUMES PER SECTION OR UNIT	UNITS NEEDED	COST PER UNIT	TOTAL EQUIPMENT COST	ASF PER UNIT	TOTAL ASF REQUIRED*	TOTAL SPACE COST			
1. CONVENTIONAL	400	7,500	189	1,418,000	19	147,000	10,177,000	1,077,000	12,672,000	4.22
2. ELECOMPACK	69,000	43	104,000	4,472,000	1,100	51,000	3,531,000	455,000	8,458,000	2.82
3. STORMOR	350	8,600	350	3,010,000	6.5	60,000	4,154,000	463,000	7,627,000	2.54
4. HALLOWELL	108,000	28	78,900	2,209,000	1,250	39,000	2,700,000	347,000	5,256,000	1.75
5. TWO-TIERED, DOUBLE-SHELVED, BY CALL NUMBER	1,176	2,550	375	956,000	19	53,000	3,669,000	406,000	5,031,000	1.68
6. TWO-TIERED, DOUBLE-SHELVED, BY SIZE	1,600	1,875	375	703,000	19	40,000	2,769,000	326,000	3,798,000	1.27

*Includes 4,130 asf for staff and users.

The methods shown on lines 5 and 6 are based on conventional shelves, but arranged in two tiers, one above the other, and the books shelved two deep, one row behind the other. In the first of these two calculations, it is assumed that the books will be kept in call number sequence, so that they can be consulted by users who need to examine bodies of material on particular subjects. In such an arrangement, utilization of the full shelving capacity becomes impractical, because at some point "the cost of labor required for shifting" books in order to add new volumes and still maintain the call number sequence becomes "so great that it will be uneconomical to permit further congestion."[11] Keyes Metcalf, perhaps the foremost authority on the subject, suggests that for this reason 86 percent of the absolute capacity should be considered the "complete working capacity,"[12] and the calculations on line 5 are made on this basis. Even allowing for this factor, however, the cost per volume is 7 cents less than the Hallowell system.

Line 6 shows the cost of the same type of shelving, but with books arranged by several size categories, and shelved in the same order as they are received. In this method, the shelves can be filled completely, and full capacity can therefore (at least theoretically) be reached. Arranging volumes by size also increases shelving efficiency. For these reasons, the unit cost for this method is significantly lower: $1.27 per volume, or 41 cents less than the method on line 5.

It is clear from this analysis that either method 5 or method 6 should be used, the latter if maximum economy is desired, and the former if on-the-shelf consultation by users is necessary. Whether such consultation is necessary or not will depend largely on the nature of the specific items placed in the compact shelving facilities. If they are predominantly back runs of periodicals, for example, this provision may not be required; if they are primarily monographs, on the other hand, provision for consultation may be necessary if the University's research capabilities are not to be impaired. As a practical matter, the decision need not be made at this point; the construction details are the same, under either method, and use of the materials can be monitored as the shelving fills up. If the experience in the first few years indicates that provision for consultation is necessary, the materials can be kept in call number sequence and the working capacity of the compact shelving facility will simply be reached sooner than would otherwise be the case. What is most likely is that some material will be arranged in call number sequence, and some not, but the precise amounts that might be arranged by the two methods are impossible to estimate at this time. To be conservative, the discussion that follows assumes that consultation by users of all materials may be needed, and the calculations are based on method 5.

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[11] Keyes D. Metcalf, Planning Academic and Research Library Buildings, McGraw-Hill, 1971, p. 155.

[12] Ibid.

Bibliographic Records. To the cost of equipment and space for this alternative must be added several other elements of cost, among them the cost of changing bibliographic records to reflect the changed location of the material. The procedure proposed is to construct a brief bibliographic record for both the on-line union catalog and the automated circulation system, and to use the latter to "charge out" the book to the compact shelving facility. Users consulting the on-line catalog will find the location recorded there; those who use the card catalog and look for the book on the open shelves will not find it, of course, but on inquiry will be told that it is charged to the compact facility. The cost of constructing the necessary brief records is estimated at $1.00 per volume.[13]

Construction Costs. Another obvious element is the cost of constructing the building to house the equipment and books. This cost varies depending on the location of the facility: whether it is built on a campus or at a low-cost industrial site, and whether it is built in the Northern part of the state or the South. According to the Office of the Coordinator of Physical Planning in Systemwide Administration, the cost of such a facility on campus in the South would be approximately $98 per asf, and in the North approximately $108. The cost of a facility off campus would be approximately $76 per asf in the South and $81 in the North.

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[13] An added advantage to this approach is that the arbitrary item numbers used in the circulation system may be assigned to volumes on their way to storage by size ranges, and this number can then do double duty as the inventory control number in storage.

The additional cost for on-campus construction takes into account the fact that the building must blend architecturally with other campus buildings, may involve some demolition, and may need to be a multi-story building; the off-campus facility is assumed to be a low-cost, one-story warehouse. The estimated costs for the off-campus facility include the cost of land, which in the case of the on-campus facility is assumed to be free. In all figures, the cost of temperature and humidity control for proper preservation of the material is included.

Number of Facilities. The experience of research libraries in the past has been that compact shelving as a strategy for individual institutions is marginally efficient at best.[14] From the analysis made in connection with development of the space model for this plan, however, it appears that there may be significant economic benefits from a compact shelving facility if it is shared cooperatively, on a regional or systemwide basis. Beyond about 4 million volumes in capacity, however, there appear to be no further economies of scale, so that there is little economic difference between, say, two facilities (one in the North and one in the South) and one facility for the system as a whole.

From the standpoint of the performance goals mentioned in other parts of the plan, of course, it is important that there be at least two facilities. Material to be placed in them may be material needed within two days, so if this material is to be supplied within that time frame it must be housed within the region.

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[14] See, for example, C. E. Friley and R. W. Orr, "A Decade of Book Storage at Iowa State College," College & Research Libraries, v. 12, 1951, pp. 7-10; and George Piternick, Book Storage in Academic Libraries, Council on Library Resources, 1974.

For the purposes of the model and this plan, therefore, two regional compact shelving facilities are assumed, one in the North and one in the South.

Staffing the Facilities. For each of the two facilities, a minimal staff will be necessary to service requests and carry on its activities. Based on the experience of other institutions and estimated workload, a staff of 13 is projected for each of the two facilities, as follows:

1 Director
4 FTE for maintenance of files and circulation activities (including service to on-site users)
4 FTE for shipping and receiving
4 FTE for stack maintenance, retrieval and replacement of needed items.

The cost of this staffing is estimated at approximately $194,000 per center per year. For the 6 years between the time the facilities are occupied and the year 1987/88, the cumulative staffing costs for the two facilities, in 1977 dollars, would be $2,328,000.

Total Costs of the Facilities. The total costs of the proposed facilities, both on-campus and off-campus can now be calculated, and are shown in Table 33. Some new construction on campuses will still be necessary for works that do not fall into the categories eligible for compact shelving, so the cost of this construction must be added in. The total costs for this alternative, as indicated, are then about $56,561,000 if the facilities are off-campus, and about $59,165,000 if they are constructed on campus. The savings realized by this alternative as compared with the "base case" are $32,869,000 or $30,265,000, depending on the location of the facilities.

Elimination of Unnecessary Duplicates. If two regional facilities are assumed, an additional economy measure may also be considered. Because the materials to be shelved in the regional facilities will be little-used, there would be relatively little point in retaining more than one copy within the region. With the data collected by the research team, it is possible to estimate the

Table 33

Estimated Costs of Compact Shelving Facilities Alternative (Off-Campus and On-Campus)

Projected to 1987/88
(Assuming Staffing Based on Plan)

Off-Campus Compact Shelving

Cost of necessary additional construction of conventional library buildings on campus	$38,830,000
Cost of compact shelving facility	9,645,000
Cost of compact shelving facility staff	2,328,000
Processing costs (selection of materials for compact shelving and creation of bibliographic records)	5,758,000
TOTAL COST, OFF-CAMPUS FACILITY ALTERNATIVE	$56,561,000

On-Campus Compact Shelving

Cost of necessary additional construction of conventional library buildings on campuses	$38,830,000
Cost of compact shelving facility	12,249,000
Cost of compact shelving facility staff	2,328,000
Processing costs	5,758,000
TOTAL COST, ON-CAMPUS FACILITY ALTERNATIVE	$59,165,000

Savings Over "Base Case"

"Base Case" costs (construction of conventional library buildings) (assumes staffing based on plan)	$89,430,000
Off-campus compact shelving alternative	56,561,000
SAVINGS REALIZED	$32,869,000
"Base Case"	$89,430,000
On-campus compact shelving alternative	59,165,000
SAVINGS REALIZED	$30,265,000

degree of overlap between collections within a region, and within categories of recorded use. Based on the estimates of overlap in the eligible categories, it appears that the volumes placed in compact shelving in the North could be reduced by approximately 11.5 percent, and in the South by 29 percent. The costs of this alternative are accordingly reduced to $54,488,000 if the facilities are built off campus, or $56,532,000 if on campus, with savings over the "base case" of $34,942,000 and $32,898,000, respectively.

Determination of Location. At this point it will be noted that the difference in cost between the off-campus and on-campus alternatives is less than four percent. This is a relatively small amount, and might be offset by other considerations in determining the actual sites of the regional facilities. Indeed, there are several factors that must be taken into consideration before specific locations of the facilities can be recommended: availability of space on particular campuses, costs of transportation to and from the facility from each campus in the region, actual land costs for particular locations and so on. Final determination of the sites should be made by detailed feasibility studies, and funds for these studies will be requested in the 1978/79 budget. Pending completion of these studies, the plan uses the average costs for off-campus facilities, both in the North and the South, in the recommendations which follow.

Recommendations. The total costs of all alternatives may now be calculated, and are summarized in Table 34. Based on the costs shown, and the considerations discussed above, the plan recommends a combination of the alternatives in the columns marked "I" and "E". Specifically:

. that two regional compact shelving facilities be constructed, one in the North and one in the South;

. that the site of the facilities be determined by detailed feasibility studies;

. that material in them be double-shelved, initially in call number sequence;

Table 34

Summary of Alternatives, by Elements of Cost
(1976 Dollars, in Thousands)

	A	B	C	D	E	F	G	H	I	J
	Conventional Libraries on Campus		Microform			Weeding	Compact Shelving		Compact Shelving, No Dupes	
Cost Element	Assuming Past Research Library Staff Patterns	Assuming Staff Recommended in Plan	Conversion of All Eligible Materials	Replacement With Film If Available	Subscription to Microfilm in Lieu of Binding		Off Campus	On Campus	Off Campus	On Campus
Conventional Construction on Campus	$105,998	$89,430	$ 56,084	$83,490	$88,660	$46,596	$38,830	$38,830	$38,830	$38,830
Construction of Compact Shelving Facilities							9,645	12,249	7,572	9,616
Staff for Compact Shelving Facilities							2,328	2,328	2,328	2,328
Processing of Materials			5,758	24	10	9,788	5,758	5,758	5,758	5,758
Other Costs			201,978[1]	6,222[1]	-327[2]					
Total Cost of Alternative	$105,998	$89,430	$263,820	$89,736	$88,343	$56,384	$56,561	$59,165	$54,488	$56,532
Savings Compared to Base Case	-$ 16,568	Base Case	-$174,390	-$ 306	$ 1,087	$33,046	$32,869	$30,265	$34,942	$32,898

[1] Cost of microforms and readers.

[2] Savings from binding costs not incurred, less cost of microforms and readers.

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- that brief bibliographic records be prepared for all materials transferred to the regional shelving facilities, both for the on-line catalog and for the automated circulation systems;
- that duplicates in the facilities be eliminated;
- that, in campus libraries, when a microfilm edition is available for current serials to which a library subscribes, and when the microfilm is adequate for research use, the microfilm edition be subscribed to. The microfilm subscription should be in addition to the full-size copies, and should be retained in lieu of binding the originals.

The total cost of this combination of alternatives over the 10-year period in question is approximately $53,401,000 compared to the "base case" cost of $89;430,000, a net savings of $36,029,000.

The effect of these recommendations on each level of the proposed library system should also be noted.

Branch. At the branch library level, the alternatives recommended would result in little change. Many branch libraries already routinely send less frequently used materials to the main campus library, and it is assumed that this practice will continue. Except for the larger branches already in existence, the plan recommends that branch libraries contain only material needed for immediate use, so the size of these libraries may be expected to remain relatively small. If new branches are justified on the basis of the need for immediate accessibility to certain materials, it is assumed that the space and equipment for these branches will be requested as part of the project planning guides for the buildings in which they are to be housed.

Campus. The principal effect on the campus level will be to reduce the amount of new construction. Some campus construction will still be needed in order to house newly-acquired material that is used frequently, but the amount will be far less than would be necessary without the compact shelving facilities. Less frequently used materials might be placed in compact shelving on campus, either in new construction when that becomes necessary or in remodelled portions of existing libraries, and project planning guides should take this possibility into account.

There are also several specific instances in which it appears that campus capital improvement programs are warranted for reasons other than lack of space:

. At Berkeley, the Doe Library, constructed in the early years of the century, is poorly arranged, expensive to maintain, and increasingly expensive to alter in order to provide even minimal service facilities. It is one of the few remaining university libraries in the country with closed stacks, necessary because of the design of the building. Most seriously of all, it is unsafe, both for the occupants (users and staff) and for the collections. In the event of even a moderate earthquake--and the building is very close to the Hayward fault--there is likely to be considerable loss of life, and large portions of the collections would be destroyed. A project planning guide should be submitted for a new main library building, and consideration given to alternative uses of Doe. Among the possibilities that should be considered, of course, is the feasibility of remodelling it to serve as the Northern regional compact shelving facility, although a superficial analysis indicates that it is unlikely that it can be economically adapted to this function.

. At Davis, the main (Shields) library, constructed in 1939 with additions in 1964 and 1967, is (in one writer's words) "a series of mistakes." It is poorly arranged for both the users and the staff, so that adequate service is difficult to offer. Whether remodelling the present facility would correct the deficiencies or whether a new structure is needed is at present unclear, but a project planning guide should be developed in consonance with the recommendations in this plan.

. At San Francisco, consideration should be given to the question of whether the existing facilities are adequate, once little-used materials are transferred to the regional center. It appears likely that some remodelling and renovation will be necessary, and a project planning guide should be developed for this purpose.

Region. The principal effect of the recommendations at the regional level have already been implied, the major change being the creation of regional compact shelving centers. Materials needed within two days will in many cases continue to be housed in existing facilities on the campuses within a region, but some materials from each campus will eventually be housed in the regional center. The materials may be brought to the home campus by the jitney service described in Chapter VI, or users may travel to the regional center by jitney or other transportation. Given the availability of methods for predicting the likelihood of demand, as discussed earlier, however, the occasions for users to visit the regional center should be seldom.

The Richmond facility, intended as a regional storage center but in practice used almost exclusively by the Berkeley campus, should be abandoned. It is completely unsatisfactory for service as the regional shelving facility recommended. Temperature and humidity control are inadequate, so that the material stored there is deteriorating, and industrial pollutants are exacerbating the problem. Recently 55,000 reels of microfilm had to be removed because they were being destroyed by the pollutants in the ambient air. Structurally the building is unsafe, and severe damage would be done to the contents in the event of a seismic disturbance. The City of Richmond has indicated a desire to purchase the facility, and voters of the city have approved a bond issue to do so. This provides an excellent opportunity to dispose of an unsatisfactory solution to the library system's housing needs.

State. The California State University and Colleges, and two large private universities (Stanford University and the University of Southern California) have indicated a desire to participate in the use of regional facilities such as those proposed. Each has indicated a willingness to allow weeding to a single copy of each title in the facility, and each has indicated a willingness to share in the cost of the facility to the extent that they use it. This appears to be an excellent opportunity for meaningful intersegmental cooperation, and should be pursued.

The estimated number of additional volumes that would be added by the other segments is indicated in Table 35.

National. Mention has been made elsewhere in this document of the Center for Research Libraries, and the benefits of membership in the Center. At present, plans are underway to enlarge the Center's facilities, so that it can accept books and other materials that member libraries may wish to store there. Membership in the Center has already been recommended in the plan for other reasons, but this would be an additional benefit. If, after ten years in the regional facility a work has not been called for, it should be considered for storage at the Center for Research Libraries, where it would remain available for use if needed. Significant savings in future construction (beyond the scope of this plan) would result from this strategy without a significant reduction in the availability of the material, considering that such material is unlikely to be needed in less than the Center's normal delivery time of about seven days.

A National Lending Library, such as that envisaged by the National Commission on Libraries and Information Science, might provide sufficient back-up provisions that some materials in the regional centers could be discarded, but as noted in the economic analysis this is likely to cost more money than it would save.

For housing of the library system, then, the major recommendations of the plan are the establishment of two regional compact shelving centers as specified, plus subscription to current serials in microform in lieu of binding. These steps will provide major savings in costs, and in combination with the other recommendations of the plan will help meet the goals of the total system in an efficient and cost-beneficial way.

Table 35

Estimated Number of Volumes That Would Be Shelved in Regional Compact Shelving Facilities by Other Libraries (Cumulative Totals, by Institution)

Year	CSUC*	Stanford	USC
1981/82	49,000	100,000	100,000
1982/83	98,000	100,000	150,000
1983/84	147,000	100,000	200,000
1984/85	196,000	100,000	250,000
1985/86	283,000	100,000	300,000
1986/87	395,500	100,000	350,000
1987/88	535,500	100,000	400,000

*Assuming elimination of duplicates

CHAPTER XI

GOVERNANCE OF THE LIBRARY SYSTEM

Except at the new regional level, the Plan recommends no change in the present governance of the University's libraries or library system, nor in present reporting relationships.

Branch Libraries. As indicated in Chapter IV, there are branches and other library units on all of the University's campuses. Many of the branches report to the University Librarian of the campus, but many do not. Whether such arrangements are appropriate or not is primarily, if not exclusively, a campus question, but a brief review of Systemwide policy on the matter may be in order.

In 1957, President Sproul issued an announcement "in response to a resolution of the 1950 All-University Faculty Conference that recognition be given to the existence of general libraries at all campuses of the University, and that the President clarify the relationship between the general and special or independent libraries." As to the latter, the President issued a "directive" which specified that "as a matter of general policy, all University-owned library facilities connected with each campus" should be under the jurisdiction of the University Librarian of the campus, and that

> proposals to create or continue libraries independent of this administrative jurisdiction will be considered only when exceptional and compelling reasons exist, and shall require approval of the Chief Local Administrative Officer [i.e., the Chancellor] and the President. In each such case serious consideration should be given, on a case-by-case basis, to the integration of such libraries with the campus library system: with due regard to past practices, special departmental requirements, and other factors that led to their independent status.

> Also, if steps have not already been taken, consideration should be given to the early development of arrangements for coordinating the administration of independent libraries, where such exist or may be created, with the campus library system, and chief campus administrative officers are authorized to take whatever steps are necessary to establish coordination or integration.
>
> The purpose of this directive is to assure that consideration will be given to the maximum general campus usefulness of all University-owned library facilities.[1]

In 1962, after consultation with the Library Council and the President's Council of Chief Campus Officers, President Kerr issued another policy statement which contained the following paragraph:

> All special libraries existing as parts of organized research units shall be administered as branches of the General Library, except where the type of collection involves special handling and where there exists mutual agreement between the General Library and the research unit. An exception requires the approval of the Chief Campus Officer.[2]

The 1974 Library Policy Task Force report mentioned the question of whether "Universitywide guidelines for branch libraries [should] be established,"[3] but did not raise the issue of governance. In the absence of any evident need for a change in the present policy, therefore, the plan recommends none.

Campus. The 1962 policy statement mentioned above also included a statement that:

> On each campus there shall be a University Librarian who shall report to the Chief Campus Officer. The University Librarian shall be responsible for the development and management of the University Library. Deviations from this administration pattern must be approved by the President upon recommendation of the Chief Campus Officer.

Since that time, the reporting relationships have been changed so that the University Librarian now reports to the Academic Vice Chancellor (or the equivalent) on each campus. A campus Library Committee of the Academic Senate and a campus division of the Librarians Association of the University of California also advise on matters of library policy and operations. The plan anticipates that this pattern will continue.

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[1] University Bulletin, v. 6, no. 3 (July 29, 1957), p. 1.

[2] Office of the President, Policy of the University of California on its Libraries, April 3, 1962, p. 1.

[3] Report of the Library Policy Task Force, 1974, p. 5.

Region. For the governance of the regional systems, there are already precedents in the formation of the Northern Regional Library System. Discussions by the Chancellors at Davis, Berkeley, and Santa Cruz in the Spring of 1974 led to the formation by the Library Steering Committee of a Subcommittee on Regional Library Planning for the Northern Campuses, chaired initially by Donald C. Swain, then Academic Vice Chancellor at Davis. By January, 1975, a list of objectives had been formulated, and funds requested for five studies "to facilitate the development of a regional library plan." In April, 1975, the Subcommittee adopted its "Fundamental Planning Assumptions for Regional Library Planning in the North," stressing the point that the system must be unified rather than several separately-defined campus collections, giving high priority to bibliographic access and a direct borrowing system, and suggesting the inclusion of private universities and campuses of the California State University and Colleges at an early date.

The Subcommittee met several times during the Fall of 1975, and on February 23, 1976, voted to create the Northern Regional Library System. A Board of Directors was established, consisting of the University Librarians of the four Northern campuses and the Executive Director of Universitywide Library Planning, with the Librarian at Stanford University as a "liaison member." The Board meets periodically to review regional matters, and has continued to study means of improving intercampus cooperation.

With this as background and precedent, the plan recommends the following basic arrangement for governance and administration of the two regional systems:

. A Board of Directors consisting of the University Librarians in the region and the Executive Director of Library Planning, ex officio. The Board would determine operating procedures for the region, with policy guidance from the office of the Executive Director and the Library Policy Steering Committee. The Board would report officially to the

Steering Committee.

. An advisory committee composed of administrators, faculty, a student representative, and a representative of the Librarians Association of the University of California (LAUC).

. A director or coordinator of the regional facility, who would supervise the staff of each facility and report, for administrative purposes, to the Executive Director.

It should be emphasized that the regional centers are intended to be Systemwide facilities, and will not be under the control of a single campus library.

To the extent that CSUC and other institutions participate in the use of the regional facility, representatives from those institutions should also be invited to serve on the advisory committee, and the librarians of those institutions should meet with the Board in a liaison capacity. Operating control of the facility, however, should remain under the jurisdiction of the University.

Systemwide. All concerned and affected sectors of the University should participate, directly or indirectly, in the governance of its library system. At present, there are several consultative and advisory channels which the plan assumes will continue:

. The Systemwide Academic Senate Library Committee advises the University on matters of library policy through two of its members who serve ex officio on the Library Policy Steering Committee, and report its deliberations back to the Senate.

. The Library Council, composed of the University Librarians from each campus, the Deans of the two library schools, and several other officers, meets twice yearly to provide a channel of communication on systemwide library operating matters, and to make policy recommendations to the Steering Committee and the President. The chair of the Council serves ex officio on the Systemwide Library Policy Steering Committee, reporting the recommendations of the Library Council, and reporting back to the Library Council on actions by the Steering Committee.

. The Librarians Association of the University of California (LAUC) provides recommendations on library matters through its President, who serves ex officio as a member of the Library Council.

. Administrative officers from the campuses, chosen on the basis of their interest in, and experience with, library policy matters, serve on the Systemwide Library Policy Steering Committee, and contribute both campus and administrative perspectives to the Committee's deliberations.

Development of systemwide library policies and plans involves full and continual consultation not only with these bodies but with interested individuals throughout the University. Advice and recommendations from all sources are referred to the Library Policy Steering Committee, which will continue to be the primary advisory body on systemwide library policy. Recommendations of the Steering Committee are then submitted to the Academic Vice President and the President for approval, and for any further discussion or dissemination they may deem appropriate.

Once systemwide library policies and plans are approved, the Steering Committee is charged with implementing them, acting through the Executive Director as its operational arm and agent. Except for activities that are formally organized on a systemwide or regional basis, however, the actual carrying out of library policies and plans will continue to be done by the individual libraries on each campus, where the particular needs and appropriate methods of operation are best known.

Statewide. Many of the statewide cooperative efforts in which the University of California libraries participate are likely to be carried out in the future through the California Library Authority for Systems and Services (CLASS), of which the University is a member. Governance provisions for CLASS are specified in the "Joint Exercise of Powers Agreement" which serves as its charter and constitution. Final authority rests with the CLASS Board of Directors, composed of one representative from each of the participating segments. President Saxon serves as the University's representative on the Board, with the Executive Director acting as his permanent alternate.

Cooperative arrangements between CSUC and the University will in the majority of cases be arranged between the individual campuses involved, through participation in one of the regional systems, or through CLASS. Systemwide agreements will be negotiated through the

Office of the Executive Director, reviewed by the Steering Committee, and approved by the Academic Vice President and the President.

National and International. Emerging national and international bibliographic networks will inevitably involve the University of California libraries, and issues of governance will undoubtedly arise as these arrangements become formalized. When decisions by the University must be made, the channels described above will be followed, with input from all affected bodies, recommendations by the Steering Committee, and decisions made by the Academic Vice President and President.

It should be emphasized that at all levels, the fullest possible communication and consultation is necessary in order to insure that all factors are considered. Only thus can decisions be wisely made and widely understood.

CHAPTER XII

SUMMARY OF RECOMMENDATIONS AND COSTS

The University of California grew rapidly during the decade of the 60's to fulfill the responsibilities mandated to it under the 1960 Master Plan for Higher Education. Three new campuses were established, and enrollment more than doubled. The University libraries also grew rapidly during this period in order to accommodate the needs of the new students, new faculty, and new academic programs that accompanied the University's growth.

With the 1970's, however, came drastically changed demographic projections and a resulting need for radical changes in planning, both for the University as a whole and for its libraries. Not only had enrollment growth slowed, but the State (particularly the State Department of Finance) had become increasingly concerned about the cost and efficiency of the libraries. In a 1971 report, the Department urged greatly increased "interdependence, cooperation, and coordination," both to reduce costs and improve service. Several University committees have recommended specific steps toward this end, and a significant amount of progress has already been made.

Yet many problems remain. There are insufficient funds for materials required for instruction and research; users face increasing difficulty in obtaining materials from the collections when they are needed; space for both users and collections is rapidly being exhausted; and library operating costs continue to rise.

To a large extent, these problems arise from the persistence of traditional methods of library operation, in particular the attempt to build self-sufficient, autonomous collections. A new approach is needed, with more attention to differentiating users' needs, distinguishing between materials on the basis of utility, and exploiting available technology to create a coordinated, Universitywide library system. In the words of the Academic Plan, "new patterns of library organization and service, and new strategies for getting the maximum utility from funds expended,"[1] are needed to provide better service and a wider range of resources.

The discussion in the first four chapters led to several conclusions which form the basis for design of a new library system for the University of California.

1. The system must be based on strong and flexible campus library systems, but the building of collections must be an interdependent, collective and integrated enterprise.
2. Provision of materials within the time span needed must be the primary objective.
3. There must be adequate means of knowing about these materials and where they are located.
4. Access to materials not in a local library must be quick and reliable.
5. More extensive use of computerized systems will help to slow the rate of rise in library costs.

Users and their needs, as well as library materials, differ in ways that may be predicted with a fair degree of accuracy, so the system proposed is based on differentiated responses to these needs at multiple levels of service. Six levels are defined and discussed: department and college; campus; region; University and state; national; and international. For each level, Chapters V through XI recommend or describe appropriate methods of:

- identification and location of material;
- delivery and use of material;
- acquisition and processing of material;
- information and instructional services;
- staffing;
- housing; and
- organization and governance.

For each activity, the most important recommendations are as follows (fuller discussion of each recommendation is at the pages indicated in parentheses).

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[1] University of California Academic Plan, 1974-1978, p. 40.

Identification and Location of Material (pages 57-78). The University has determined that "the library holdings of all campuses should be considered a single University collection,"[2] but effective use of the unified collection cannot be made unless users know what is in it, and where the material is located. The plan therefore recommends the development of an on-line, computerized union catalog, with terminals on all campuses. This technique is already being employed successfully in other libraries, and has numerous advantages over the traditional card catalog. The advantages are discussed in full on pages 64 through 67, but among them are the following:

. When developed, the on-line catalog is likely to be less expensive to maintain than the card catalog.

. The information presented can be more current.

. The information presented can be more accurate, since changes and corrections are more readily made.

. Searching for information is much faster, and can also be much more efficient.

. Access to the catalog (through terminals) can be provided in many more locations, including departmental offices.

. Access to other data bases, in addition to the union catalog, can be provided through the same terminals.

Delivery and Use of Materials (pages 79-100). Once identified, the material needed must be delivered to the user within the time needed for it to be useful. At present, this is too frequently not the case. Days and even weeks may be required to deliver materials from one campus to another, and even on the campuses themselves it may take days to retrieve material and get it to the intended user.

For each level in the system, the plan recommends a desired response time, as follows:

Department and College: immediate.
Campus: one day.
Region: two days.
University and State: one week.

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[2] Report of the Library Policy Task Force, University of California Library Policy to 1980-81, 1974, p. 2.

National: two weeks.

International: one to six months.

To meet these goals, the plan recommends the following steps:

. limitation of branches to those materials likely to be needed immediately;

. installation of automated circulation systems on each campus;

. inclusion in the regular operating budget of the inter-campus bus system;

. budgeting of funds for photocopies of materials, in cases where sending a photocopy to another campus is more appropriate than sending the actual material;

. use of proxy borrowers and expediters for inter-campus loans, and encouragement of direct borrowing;

. transmission of inter-campus borrowing requests by TWX and transmission of materials by jitney bus or UPS;

. improvement of internal procedures for handling of inter-campus loans;

. coordination of the UC inter-campus system with the CSUC system;

. charging institutions outside the state for the costs of interlibrary loans;

. Universitywide membership in the Center for Research Libraries;

. use of the British Library Lending Division's services, and encouragement of efforts to develop improved access methods in other nations.

Information and Instructional Services (pages 101-112). Users also need reference information that they are unable to locate themselves, and instruction in the use of libraries and library materials. To improve such services, the plan recommends:

. formalization of existing courses in library use and research, and allowance for library instruction courses in the staffing portion of library budgets;

. encouragement of additional courses in subject bibliography and research methodology at the departmental level;

. allowance for the cost of reference services to users who are not UC students or faculty;

. a Universitywide system to insure that reference questions beyond the scope of one library are referred to a UC library or librarian with the required expertise, so that insofar as possible no reference question goes unanswered.

Acquisition and Processing of Materials (pages 113-135). New library materials must continue to be acquired if the principal objective--provision of needed material within the needed time span--is to be met, and at present the funds available for this purpose are about 14 percent below what is needed. Actual volumes added to the collection have declined steadily, with the result that the University is now acquiring only about as many volumes per year as in 1963/64; since that time, however, the student body has increased 77 percent and the faculty 80 percent. Published information has also continued to grow.

To cope with this problem in a systematic way, and to relate library planning more closely to academic planning, an acquisitions formula is proposed that is based largely on academic programs, with additional factors that take into account the number of students at both the undergraduate and graduate levels, and the amount of sponsored research on each campus. The formula indicates a requirement for purchase of 609,000 volumes per year, as contrasted with the present budget level of 523,000 volumes. The plan recommends funding at the higher level, with further increases only if there is significant growth in programs or enrollment.

The cost of actually acquiring and processing the materials purchased has been rising steadily because of the labor-intensive nature of the work involved, but on-line computer systems are now available that reduce the rate of rise in such costs substantially. They also make the process much faster, and help promote standardization. Several of the University libraries are already experimenting with such systems, and the plan recommends that they be installed on all campuses.

Staffing the Library System (pages 137-145). If the automated systems are installed, the plan anticipates that savings in staff can be made in the acquisitions/processing area. These savings will be needed to meet expected increases in service demands, to provide staff for improved inter-campus and on-campus delivery of materials, and to fund needed courses in library use. If enrollment increases, more staff will also be needed to handle the increased demands from additional students. The plan therefore recommends no increase in the acquisitions/processing area, and increases in the reference/circulation area as necessary to maintain the present ratio of library users to staff.

Housing the Library System (pages 147-185). No funds for construction of library facilities have been approved for several years, and by standard formulas the University libraries are now deficient in space by almost 250,000 square feet. Assuming continuation of the present methods of housing library collections, this deficiency will grow to over three quarters of a million square feet by the end of another ten years. Considering the magnitude of the problem and the fact that construction costs continue to escalate, it is obvious that all reasonable alternatives to present housing methods should be explored.

To accomplish this task, data was collected on the size and characteristics of each library, the patterns of recorded use of materials, and other information related directly or indirectly to the space problem. A computerized simulation model was then designed to calculate the effect, in both space and funds required, of each of a number of alternatives, singly and in combination. Based on the results, the plan rejects the alternatives of large-scale weeding and microfilming of existing collections as unfeasible and not cost-effective. It does appear, however, that the use of compact shelving techniques on a regional basis would offer significant economies, and could be implemented in such a way that service to users would not be seriously degraded--and might in fact be improved. As noted in Chapter IV, not all material is needed immediately, and material needed only within two days (the regional goal) might be provided more efficiently from a regional facility than from individual campuses. Some additional construction of traditional open-stack library facilities on campuses will still be necessary to accommodate the material likely to be used frequently, but the amount of such construction will be much less than without the regional facilities. The regional facilities could also be used by CSUC and other institutions on a cost-sharing basis.

More extensive use of microforms under one set of circumstances also appears to be advisable. If a microform edition of a current journal is available, and is suitable for research use in microform, several benefits result from procuring the microform edition and retaining it in lieu of binding the originals. Space is saved; binding costs are eliminated; the possibility of theft is sharply reduced; the material can be preserved more easily; and the material is not made inaccessible by being sent to the bindery at the time of peak usefulness.

The plan therefore recommends:

. that two regional compact shelving facilities be constructed, one in the North and one in the South;

. that when a microfilm edition of a current journal is available, the microfilm edition be subscribed to in addition to the full-size copy, and that the microfilm edition be retained in lieu of binding the originals.

Governance of the Library System (pages 187-192). No change in the present system of governance appears to be needed or desirable, except that provision must be made for governance of the regional systems. For this there is precedence in the existing Northern Regional Library System, which has a Board of Directors consisting of the University Librarians of the four Northern campuses and the Executive Director of Universitywide Library Planning. The Board reports to a subcommittee of the Systemwide Library Policy Steering Committee, and staff members assigned to regional projects report administratively to the Executive Director. Following this model, the plan recommends:

. that a Board of Directors be created for the Southern region as well;

. that the regional Boards be charged with determining operating procedures for each region, with policy guidance from the office of the Executive Director and the Library Policy Steering Committee;

. that each region have an advisory committee composed of administrators, faculty, and students;

. that the director or coordinator of each regional facility report, for administrative purposes, to the Executive Director;

. that representatives of other institutions that participate in the use of the facility serve on the regional Board in a liaison capacity, and be represented on the advisory committee.

Advantages of the System. The advantages of the multi-level system are enumerated in greater detail in the separate chapters, but may be summarized as follows:

1. Through the use of technology already available, a much greater percentage of the library material available in the University collections can be identified and located.

2. Improved delivery systems will be able to provide materials within the time frame needed, and with a higher degree of reliability than at present.

3. The resources made available through the combination of these two techniques will be much greater and much richer than any single campus system could provide.

4. The use of technology in cataloging and processing will provide for coordination of acquisitions, faster and more economical handling of materials, and the construction of a systemwide data base of bibliographic information.

5. Regional facilities will provide housing of little-used materials in a more cost-effective way than continued reliance solely on campus construction, and should help deliver such materials throughout each region more efficiently.

6. Coordination of systemwide library activities will provide the optimum library service within the limit of available funds.

Planning and Monitoring of Performance. In order to realize these advantages, however, the system must be able to perform within the guidelines mentioned at each level, and performance must be continuously monitored to insure that users' needs are being met. Some aspects of the system, by their nature, will provide the information needed to judge their performance, but statistical information-gathering procedures must be developed to provide other data needed, and periodic surveys of users will also be required to determine whether performance is satisfactory. Based on such information, and on the results of continuing research in library operations and user characteristics and needs, the library plan will also need continuous revision. Procedures which fail to accomplish the desired results must be abandoned, and new ones devised, so that performance goals are met in as cost-effective a manner as possible. The University has learned much about its libraries and their users through its investigations in recent years, but far more needs to be known to insure that the libraries are operating at optimum levels. Library planning and research must therefore be ongoing and intensive, and the plans themselves must be revised as new information becomes available.

Costs of the Library System. A final requirement for the system's success, of course, is adequate funding. In order for the new approach to be acceptable as a replacement for older methods, sufficient investment must be made in the new system, over a sufficiently long period of time, for it to be demonstrably better than what it replaces.

The estimated costs of specific recommendations mentioned in the plan, in 1976 dollars and by category and year, are shown in Table 36. Some of these costs, of course, would be offset by savings as compared with conventional methods, particularly in staffing and in capital expenditures for construction.

Total estimated library budgets, year by year, are shown in Table 37. The columns on the left are based on the assumption that the recommendations of the plan will be adopted, and the columns on the right assume that the present methods of operation will continue and staff will be increased as in comparable research libraries.

Except for the one-time rise in the book acquisition category, most of the increases in the budgets based on the plan are in two categories: salaries and equipment costs associated with the automated projects, and salaries associated with the establishment of the two regional centers and processing materials into them. Investment in automation projects is heaviest in the three years beginning in 1978/79, then declines until 1984/85 and 1985/86, when additional equipment will be needed. The major impact of the regional centers on the operating budget begins in 1982/83, when the centers must be staffed and bibliographic records must be made for material being transferred to the new facilities. After 1980/81, however, the total operating budget remains relatively stable at about 53 million dollars per year.

In contrast, the budgets which are based on present methods of operation and staffing patterns show a continual rise in the cost of salaries and associated supplies and equipment. Even if the book budget is held to its present level, increases in staff will be needed in order to service the growing collections, and if there were no staff savings from the automation projects, continuing requests for additional staff would be necessary. Assuming that present levels of service would be maintained, then, the budget under present methods would be larger than the budget recommended under the plan by fiscal year 1980/81, and

Table 36

Summary of Costs of Specific Recommendations, 1978/79-1987/88

(1976 Dollars, in Thousands)

Item	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88
Identification and Location of Materials										
On-Line Catalog	1,462	1,635	1,939	968	526	893	1,227	1,357	735	739
Delivery and Use of Materials										
Jitney Buses	220	220	220	220	220	220	220	220	220	220
Copying Service	122	122	122	122	122	122	122	122	122	122
TWX & UPS	20	20	20	20	20	20	20	20	20	20
Center for Research Libraries	82	82	82	82	82	82	82	82	82	82
Circulation Systems	300	100								
Acquisitions and Processing										
Books and Binding	2,286	2,286	2,286	2,286	2,286	2,286	2,286	2,286	2,286	2,286
Housing										
Regional Facilities	200	578	9,442	42						
Campus Facilities			875	9,349	13,439	8,130	12,132	8,054	580	383
Total	4,692	5,043	14,986	13,089	16,695	11,753	16,089	12,141	4,045	3,852

Table 37

Estimated Operating Budgets,
1977/78-1987/88

(1976 Dollars, in Thousands)

	Assuming Recommendations of the Plan				Assuming Present Methods of Operation			
Year	Books and Binding	Salaries and Wages	Supplies and Equipment	Total	Books and Binding	Salaries and Wages	Supplies and Equipment	Total
1977/78	13,542	32,138	2,538	48,218	13,542	32,138	2,538	48,218
1978/79	15,910	33,040	3,684	52,634	13,542	33,714	2,730	49,986
1979/80	15,910	33,236	3,573	52,719	13,542	35,259	2,918	51,719
1980/81	15,910	33,242	3,854	53,006	13,542	36,804	3,106	53,452
1981/82	15,910	32,861	3,315	52,086	13,542	38,333	3,292	55,167
1982/83	15,910	33,718	3,569	53,197	13,542	39,862	3,478	56,882
1983/84	15,910	33,726	3,965	53,601	13,542	41,376	3,662	58,580
1984/85	15,910	33,743	4,282	53,935	13,542	42,890	3,846	60,278
1985/86	15,910	33,737	4,418	54,065	13,542	44,404	4,030	61,976
1986/87	15,910	33,523	3,710	53,143	13,542	45,855	4,206	63,603
1987/88	15,910	33,523	3,714	53,147	13,542	47,275	4,379	65,196
Total	172,642	366,487	40,622	579,751	148,962	437,910	38,185	625,057

would continue to grow larger as time went on. By the end of the period in question, the cumulative difference would be over 45 million dollars and still growing.

Table 38 indicates the capital expenditures required to house the materials acquired during the span of the present plan (that is, for the ten years from 1978/79 to 1987/88), as well as relieving current overcrowding. As in Table 37, the columns on the left are based on the assumption that the recommendations of the plan will be adopted, and the right-hand column assumes that the present methods of operation will continue. The calculations also assume:

. that new on-campus construction will have capacity for five years' additional growth in holdings after occupancy; and

. that both regional facilities will be built in increments, with the first increments having a capacity of 3 million volumes each and subsequent increments 2 million each.

For these reasons, the totals differ from those in Table 34 on page 180, which is based on the unit costs of housing individual volumes.

As indicated in Table 38, the total cost of housing by present methods during the ten years from 1978/79 to 1987/88 would be over 110 million dollars, or almost 50 million dollars more than the cost of the recommendations in the plan. If staffing were allowed to grow according to the pattern in other research libraries, the total cost of conventional methods would be even greater: an estimated $131,000,000, or more than double the cost of the recommendations. As with the operating budget, there is clearly a justification for the steps proposed in the economics of the situation, as well as in the desire for improved service.

Conclusion. The library plan, as indicated earlier, proposes a new approach toward organization, operation and development of the University libraries. By a system of differentiated responses on multiple levels, it aims to provide a much greater range of resources than at present, with better and quicker access to those resources for all users. With the steps recommended at each level, with continuous planning and monitoring of performance, and with adequate funding, it should be possible for the system to deliver virtually all materials needed by its users, and within the time span needed. If this can be achieved, the plan will

Table 38

Estimated Capital Budgets for Housing of Collections Acquired During the Time Span of the Plan

(1976 Dollars, in Thousands)

	Assuming Recommendations of the Plan			Assuming Present Methods of Operation
Year	Regional Facilities	Campus Facilities	Total	Total
1978/79	150	50	200	
1979/80	428	243	671	389
1980/81	9,442	631	10,073	1,159
1981/82	42	9,349	9,391	15,609
1982/83		13,439	13,439	28,685
1983/84		8,130	8,130	16,765
1984/85		12,132	12,132	26,191
1985/86		8,054	8,054	19,678
1986/87		580	580	1,248
1987/88		383	383	948
Total	10,062	52,991	63,053	110,672

have maximized returns, not only on the financial investment by the State, but also on the considerable intellectual investment of the University in its libraries.

APPENDIX

LIBRARIES OF THE UNIVERSITY OF CALIFORNIA AND APPROXIMATE HOLDINGS, JUNE 30, 1976

LOCATION	VOLUMES
Berkeley	
Main	
Central Collection	2,381,251
Bancroft Library	273,472
Morrison Library	10,627
Branch Libraries	
Agriculture	89,328
Anthropology	45,460
Astronomy-Mathematics/Statistics-Computer Science	37,701
Biochemistry	7,315
Biology	177,670
Chemistry	31,188
Earth Sciences	62,373
East Asiatic	371,958
Education/Psychology	92,563
Engineering	85,027
Entomology	11,751
Environmental Design	112,246
Forest Products	6,150
Forestry	22,368
Graduate Social Science	72,771
Library School	34,490
Moffitt Undergraduate	158,138
Music	88,451
Optometry	4,896
Physics	22,696
Public Health	58,405
Social Welfare	16,654
Unaffiliated Libraries	
Center for Chinese Studies	28,000
Giannini Foundation of Agricultural Economics	15,099
Institute of Governmental Studies	351,002
Institute of Industrial Relations	12,110
Institute of International Studies	21,381

LOCATION	VOLUMES
Berkeley (continued)	
Unaffiliated Libraries (continued)	
Institute of Transportation and Traffic Engineering	68,581
Law	349,075
Water Resources Center Archives	72,000
Davis	
Main	914,260
Branch Libraries	
Health Sciences	129,582
Physical Science	116,668
Sacramento Medical Center	12,609
Unaffiliated Libraries	
Law	141,421
Irvine	
Main	565,105
Branch Libraries	
Biological Sciences	21,773
Medical Sciences	85,320
Museum of Systematic Biology	4,100
Physical Sciences	40,157
Los Angeles	
Main (University Research Library)	1,967,451
Branch Libraries	
Architecture & Urban Planning	7,050
Art	51,112
Biomedical	326,534
Chemistry	45,655
Clark Memorial	74,371
College	176,136

LOCATION	VOLUMES
Los Angeles (continued)	
Branch Libraries (continued)	
Education & Psychology	106,602
Engineering & Mathematical Sciences	145,580
English Reading Room	18,568
Geology-Geophysics	70,279
Law	251,666
Management	108,372
Map	3,749
Music	72,412
Oriental	158,554
Physics	29,658
University Elementary School	16,585
Riverside	
Main	679,961
Branch Libraries	
Bio-Agriculture	97,928
Physical Science	64,170
San Diego	
Main	766,850
Branch Libraries	
Biomedical	117,952
Cluster Undergraduate	57,802
Science & Engineering	96,112
Scripps Institute of Oceanography	111,993
University Hospital	18,233
San Francisco	
Main	421,559
Unaffiliated Libraries	
Langley Porter Neuropsychiatric Institute	16,046

LOCATION	VOLUMES
Santa Barbara	
Main	1,103,739
Branch Libraries	
Arts	84,186
Santa Cruz	
Main	395,565
Branch Libraries	
Science	119,167